FLORIDA® WILDLIFE

November - December 1985

Give Black Ducks A Break

Once the prince of waterfowl in the East, black ducks are in trouble. Their population has declined steadily for 20 years. Biologists with the U.S. Fish and Wildlife Service, Canadian Wildlife Service, and state wildlife agencies are studying the problem and have intensified research in recent years. Meanwhile, hunters are being asked to go easy on black ducks.

The black duck's nesting and wintering habitats have been decimated by agriculture, urban development, and further degraded by pollution. As the eastern forests disappeared, the more adaptable mallards moved in. Now there's evidence that mallard drakes are breeding with black duck hens, and some biologists fear that black ducks could be hybridized out of existence.

Biologists are not certain how much hunting has contributed to the black duck's decline. But hunting is one mortality factor we *can* control, and hunting seasons and bag limits have been restricted. *Hunter cooperation is the key to helping this duck in distress.*

Your state and federal wildlife agencies, with assistance from private conservation groups, are doing everything they can to bring the black ducks back. You can help by learning to identify black ducks as they come in over your blind—and then give them a break.

U.S. Fish and Wildlife Service, National Audubon Society and FLORIDA WILDLIFE

FLORIDA® WILDLIFE

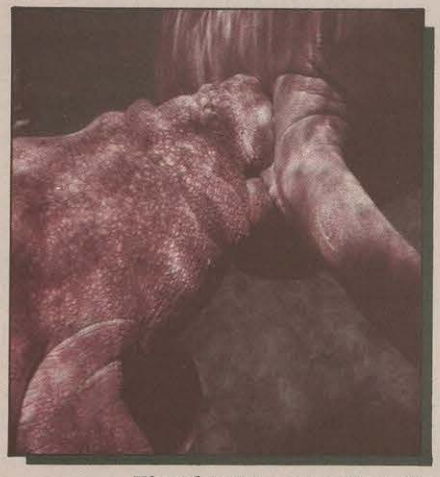
Dedicated to the appreciation and enjoyment of our wildlife heritage, and to a fuller understanding of efforts directed toward the protection, restoration, enhancement and wise use of our natural resources.

Florida Game & Fresh Water Fish Commission
Publisher

Volume 39, Number 6 November-December 1985

In this issue

An Excellent Partnership, Page 10



Florida's Manatee, Page 30

2 **A Real Bass Fisherman,** By John M. Dean
4 **Nontoxic Shot Saves Waterfowl,** By Mark A. Trainor
6 **Worm Rigs That Work,** By Larry Larsen
10 **An Excellent Partnership,** By Judy Gillan and Roy King
14 **Hugh Bradford Nicholson, Sculptor,** By John Waters Jr.
18 **1985 Photography Winners,** Part 2, By John Roberge
26 **Bee Haven Bay—An Endangered Wetland?** By Perry Oldenburg
30 **Manatee—Florida's Bashful Behemoth,** By Doug Perrine
34 **The Wild Hogs of St. Marks,** By Gary E. Sabbag
37 **Delicate Balance— Georgia Blind Salamander,** By D. Bruce Means
38 **Hens, Jakes and Gobblers,** By Lovett E. Williams
45 **A Special Offer From FLORIDA WILDLIFE**

DEPARTMENTS

-42- **Hunter Education News**
-46- **Conservation Update**

THE COVERS

The praying mantis eating a lubber grasshopper, shown on our front cover, was photographed by Walter Dawn. The duck hunting scene on our back cover was taken by Clay Stevens. Both photographs were First Place winners in our 1985 photography contest. See page 18 for more.

Editor John M. Waters Jr.
Art Editor John Roberge
Circulation Manager Mary Beth Savage
Circulation Assistants
Steven O. Lewis Laverne Roberts
Editorial Assistance This Issue Mark A. Trainor
Contributing Photographer William A. Greer

Electronic Typesetting
Florida Game & Fresh Water Fish Commission Word Processing Center

Typesetter
Sharon Marshall

Printing
Rose Printing Company Inc.

© Florida Game and Fresh Water Fish Commission 1985

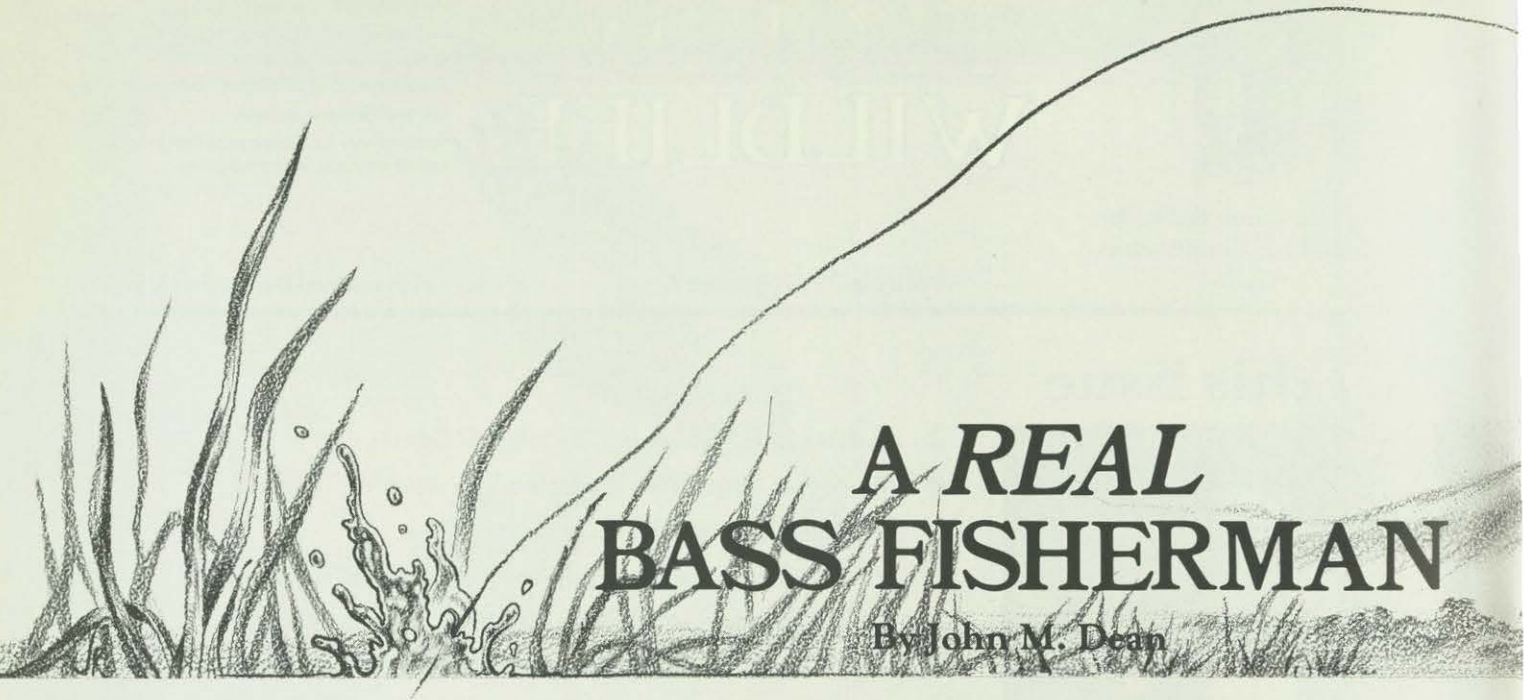
Permission to reprint the Commission's materials appearing in FLORIDA WILDLIFE will be routinely granted, in writing by the editor, for noncommercial and public informational purposes. Please write FLORIDA WILDLIFE Editor, 620 South Meridian, Tallahassee, FL 32301, for permission.

FLORIDA WILDLIFE (ISSN 0015-4369) is published bimonthly by the Florida Game and Fresh Water Fish Commission, 620 South Meridian, Tallahassee, FL 32301. Single copy price-$1.25, including state sales tax. Subscription rates, 1 year, $7.00; 3 years, $20.00. Second-class postage paid at Tallahassee, Florida. Post Office Publication Number 202440.

FLORIDA WILDLIFE® is a registered trademark of the Florida Game and Fresh Water Fish Commission.

HOW TO SUBMIT

Contributors should write the Editor and request "How to Submit" before sending contributions. The Commission assumes no responsibility for unsolicited manuscripts and illustrative materials.



A *REAL* BASS FISHERMAN

By John M. Dean

One tranquil Saturday morning several months ago, I was doing some relaxed fishing on one of the lakes of the Kissimmee chain. Around 8 a.m., I noticed what appeared to be a parade of bass boats congregating next to a vegetated area on the east side of the lake. These were all modern rigs with high-performance engines, padded swivel seats and humming electric motors. Just inside the edge of the weeds was a lone fisherman in a plain 12-foot aluminum boat. He had a low-horsepower outboard. He was anchored, watching all the other boats in apparent subdued amusement.

The bass boats were motoring along, their high-thrust electrics churning the camel-colored water beneath their bows. Most of these boats were moving along at a pretty good clip, covering a lot of territory quickly. However, even though it was a beautiful day and the scene was a perfect setting on a popular lunker lake, the picture was incomplete. The parade of fishermen were not catching any bass.

Every now and then someone picked up a small fish, but other than that, the catch was nothing. The morning quickly turned into a contest to see who could beat the water with the most casts per hour. Considering the time of year, everyone was having terrible luck, except for the fellow in the small aluminum boat.

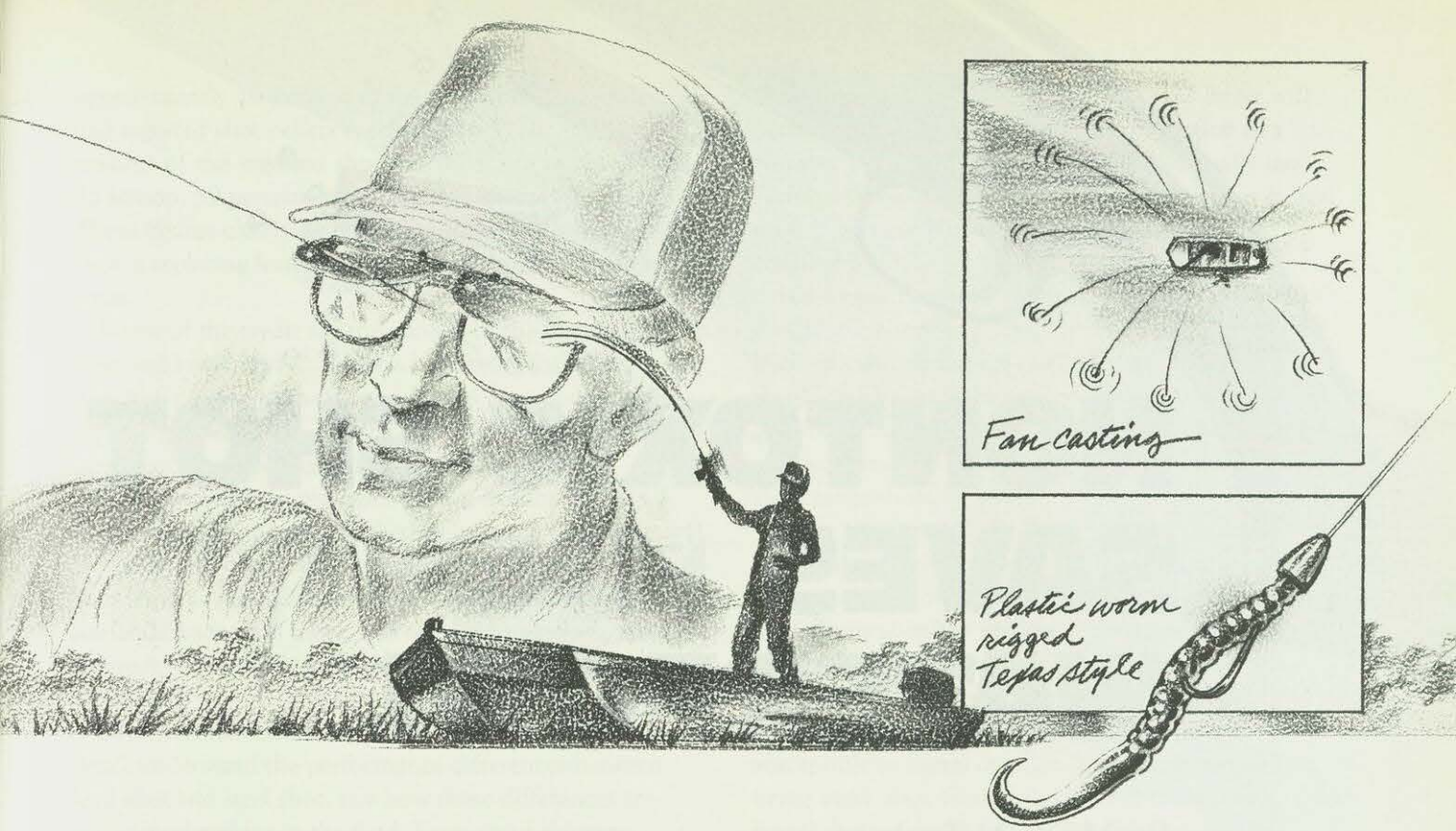
He was using the same tackle as everyone else—bait casting reel, stiff rod and a dark-colored plastic worm rigged Texas style. But the big difference in his method and that of everyone else's was that he wasn't moving very fast or very far. He would anchor in one spot, then slowly and thoroughly fish the area around his boat.

His technique of working the worm was a slight variation of the "raise the rod tip and take up the slack" routine. He jerked the rod tip slightly (usually twice on each lift) pausing for a few seconds between each jerk. This gave the worm a "jigging" type action, and it was immediately after these slight jerks that he was getting the majority of his hook-ups. Apparently aware of their natural instinct to strike, this angler had found a key to getting strikes from fish that seemed to be uninterested in feeding.

There, in the midst of us all, each somewhat of an expert unto himself, was a *real bass fisherman*. He would even cast to the same spot several times and work his rig just as slowly each time. Sometimes it paid off, sometimes not. I finally decided that he was doing this to purely aggravate the fish into gulping down his offering.

Another technique he used—one known to many but used infrequently—was fan casting. He made casts in a circle around his boat until he had covered all the fishable water within reach. After he had done this, and seemingly satisfied himself that he could aggravate no more fish, he would weigh anchor and move to a new area.

Finally, after watching him catch several nice bass and release half of them, my curiosity got the best of me and I eased over beside his boat to visit. As I approached close enough to see him, I guessed he was in his mid-40s. His hair appeared to be slightly balding under his



baseball cap and he was wearing flip-down sunglasses attached to his eyeglasses. I introduced myself, told him I had been watching him, then asked how he had hit upon his particular style of bass fishing. He told me first how he had previously owned a high-performance bass rig, but had recently sold it.

"Whenever I did get to use that boat," he explained, "I did more ridin' than fishin.' Now don't get me wrong," he continued. "I'm not sayin' that everybody who has a nice big bass boat rides more than they fish—I'm just sayin' that I did.

"I believe in those rigs and certainly enjoyed mine for a while. Those depth finders are somethin' else too. You just can't beat 'em when you need to find out how the bottom looks. But for this kind of bass fishin' [it was only about four feet deep], ya just don't need 'em."

We talked for a while longer about the particular lake we were on and about bass fishing in general, then he told me that years ago, when he was a boy, he learned to fish from his father. The family had been too poor to afford even a small gasoline outboard, so they used oars to move the old wooden boat. He said the constant rowing quickly became tiresome, so they would stop near a "fishy looking" area and fish all around the boat very slowly as they rested.

"Back then," he said, "we were fishin' for meat and we used either shiners or sand minnows for bait, and long cane poles. Pretty soon, we found out we could catch more fish by stoppin' and fishin' around the boat than we could by movin' all the time. Another thing we found out by doin' that was that the fish have more time to see the bait because you tend to leave it in one spot longer.

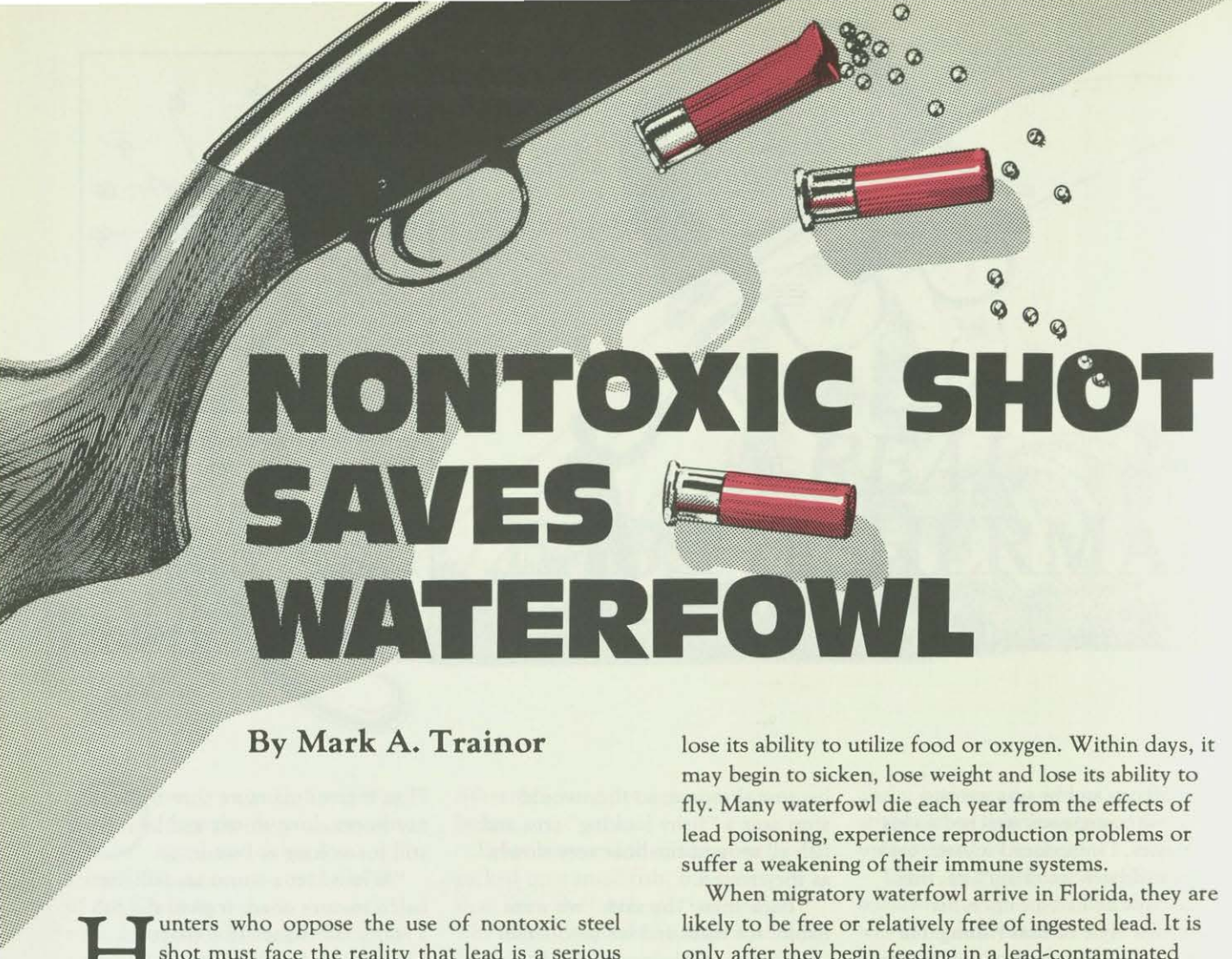
"The reason I cast so much is that fair-sized bass don't like to move much—even when they're feedin'—and they don't move hardly at all when they're not feedin.' I figure that if I cast enough times, I'm bound—sooner or later—to get it near one's nose. When this happens and you work your worm just right, the fish'll be more likely to pick it up.

"A lot of people just don't have the patience to fish this way, but I really get a lot out of it. When you sit still, you tend to see more of the little things that go on in a lake. Plus, it gives me more time to work my worm along slowly and let it lay still for as long as I want.

"When I let a worm lay still for half a minute or so, it gives the fish a real good chance to look at it. Then, when I get their curiosity up pretty good, I yank the worm a little. Usually, if a fish has been starin' at it, he'll suck it up just because of the natural impulse he has in him to strike. This'll also work good when they're feedin,' but sometimes it's the only way to get a strike when they're just layin' around."

We sat silently for a while after the visit, then he pushed his cap towards the crown of his head and wiped the beads of sweat from his face. It was warm that morning. He looked at me in his own unique manner and said,

"You know, when fish aren't feedin,' you gotta make 'em hit. It's one thing to catch a bass when its belly's empty, but it's a whole different thing to catch one when its belly's full." □



NONTOXIC SHOT SAVES WATERFOWL

By Mark A. Trainor

Hunters who oppose the use of nontoxic steel shot must face the reality that lead is a serious environmental contaminant and will probably be banned in many more areas of concentrated waterfowl hunting. Presently, 33 states have steel shot zones and it's safe to say that within the next few years, there will be a noticeable shift across the country to "nontoxic steel shot only" in areas where ducks and hunters gather in high numbers. The switch to steel shot is considered by many conservationists to be good, long overdue and essential to the preservation of our nation's waterfowl.

So what is the underlying problem? Lead is a persistant contaminant that has no known beneficial biological function. Lead poisoning has been documented by the U.S. Fish and Wildlife Service (FWS) as one of the more common causes for waterfowl mortality in the United States.

Each year, waterfowl hunters deposit an estimated 3,000 tons of lead shot into the nation's wetlands. Much of this shot falls into marshes and lakes where waterfowl feed. Here, they can ingest spent lead pellets, mistaking them for food or grit. Ingested pellets first travel to the gizzard, where they react with digestive fluids and dissolve into a toxic lead salt compound which enters the bloodstream. Once this poison enters the bloodstream, the victim may become anemic and lose its ability to utilize food or oxygen. Within days, it may begin to sicken, lose weight and lose its ability to fly. Many waterfowl die each year from the effects of lead poisoning, experience reproduction problems or suffer a weakening of their immune systems.

When migratory waterfowl arrive in Florida, they are likely to be free or relatively free of ingested lead. It is only after they begin feeding in a lead-contaminated area that poisoning begins to occur. This can be in as little time as a week, but can also take a longer time, depending on the amount of lead consumed and the health of an individual bird.

As most waterfowl arrive during the open hunting season, and most of the worst results of poisoning become apparent after the season closes, few hunters witness the suffering and death.

An estimated three percent—1.6 to 2.4 million—of North America's waterfowl die each year from lead poisoning. This is roughly 10 times more waterfowl than Florida hunters harvest each year.

Lead poisoning also occurs in other species which feed on waterfowl. For example, bald eagles and falcons sometimes suffer lead poisoning when they prey on sick, crippled or dead waterfowl, which also contain ingested lead shot. Recently, FWS established nontoxic steel shot zones in specific areas throughout the United States to increase protection of bald eagles from this possibility.

Wildlife biologists for the Game and Fresh Water Fish Commission have identified 13 areas in Florida where large deposits of lead shot are found. Hunters must now use nontoxic steel shot in these areas. Studies by the Commission, since 1976, have shown that

approximately 10 percent of the waterfowl examined had ingested shot pellets each year. In 1976, 100 percent of the ingested shot was lead, but in the 1984-85 season, 59 percent of the ingested shot was steel. These figures clearly demonstrate that nontoxic steel shot is replacing lead shot in the environment in these areas.

Much of the credit for the success of the higher steel shot and lower lead shot levels now being found in waterfowl is due to the elimination of gauge exemptions for shotguns in 1982, and the increase in the number of steel shot zones throughout Florida since 1976.

It is impossible to remove all the lead shot that has accumulated in the state's marshes over the years, but lead shot will eventually be replaced by nontoxic steel shot. And as natural sedementation occurs in these wetlands, more and more lead will be covered up, where it is less likely to be ingested by feeding waterfowl.

Some hunters resist using steel shot because they don't understand the performance differences between lead shot and steel shot, nor how these differences are accommodated for in the field. Extensive field tests, however, have shown that although the ballistics of steel shot are different from lead shot, it is still effective for bagging waterfowl. Hunters who are willing to take time to learn which shotshell loads, barrel chokes, and lead distances are best for shooting steel shot will have no significant problems using it.

Steel shot is lighter in weight, thus its initial speed is faster. It also slows down quicker. This characteristic requires hunters to adjust lead distances. At close range, hunters should *shorten* lead distances when shooting steel. And, because steel also slows down faster than lead, hunters must *increase* lead distances at longer ranges.

Hunters need to be more precise in their point of aim when using steel shot. Practice on a target range will help most hunters become proficient at shooting steel shot. An improved cylinder choke or "skeet" choke is recommended for hunters using steel shot for the first time. This improves the ability of the shooter to hit more precisely. After skill and confidence have been gained shooting an open choke, a hunter can work up to tighter chokes.

Since steel pellets are harder than lead, they are not significantly deformed when fired. This makes the shot group more evenly distributed and the shot string shorter. Because of these characteristics, steel pellets deliver their energy to the target more efficiently than lead pellets.

Hunters should generally use a pellet at least two sizes larger in steel to get the equivalent energy of lead. Many scientific experiments on steel and lead shot performance for harvesting waterfowl (by untrained hunters) show that a steel pellet two sizes larger will perform about the same—with the exception of a Number 6. So, for this reason, if you normally use Number 6 lead shot, you should use a Number 6 steel shot. If you use Number 4 lead, you should use Number 2 steel.

For longer ranges, if you use Number 4 lead, you should use Number 1 steel; or if you use Number 2 lead, you should use BB steel. Recent studies indicate that Number 4 steel has never worked as well as Number 2 and Number 1 steel for ducks at longer ranges. However, Number 4 steel is effective for very close range shots.

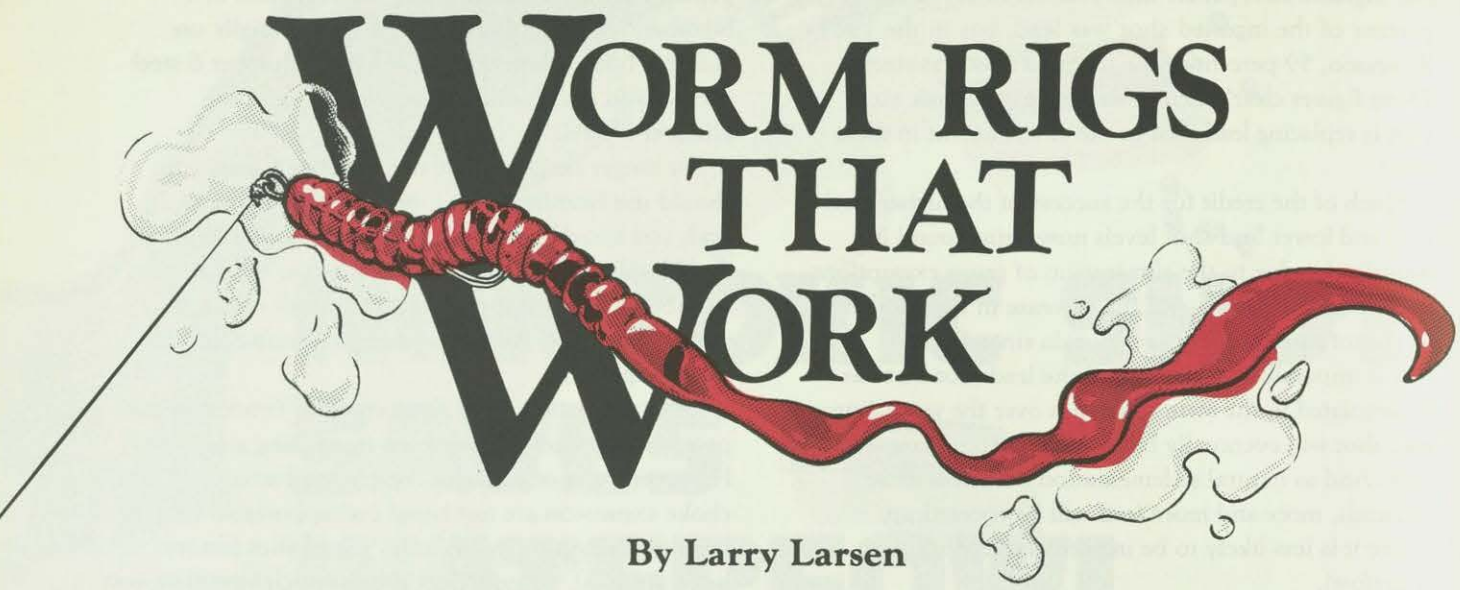
Many sportsmen have also expressed concern about potential damages to their guns from using steel shot. However, fears of scratched or eroded barrels and choke expansion are not based on supportable data for most modern guns, when today's steel shot factory loads are used. Some older models which have thin, soft barrels, and some double-barrel shotguns are susceptible to barrel damage. Tests demonstrate that firing steel shot from modern American-made single-barrel shotguns with full chokes either caused no damage or else damage was so slight that it had no measurable effect on shooting performance. Problems of barrel scratching and erosion associated with earlier steel shot loads have been completely eliminated through the combined improvements of shotgun design, increased barrel hardness, and improved shotshells.

Because steel shot is still a relatively new product, it is about 50 percent more expensive than lead shot. Wad, powder and shot components are also more costly for those who reload.

As various states establish additional steel shot zones and regulations, however, the cost of steel shot is expected to decrease. Already, some steel shot and lead shot loads are not very different in price. The overall cost to most hunting trips is not really affected much by the cost of shotshells, and the higher cost of steel shot is really a low price to pay to better manage our waterfowl resources and protect our continuing opportunity to hunt some of these species.

If hunters fail to cooperate in converting to steel shot, the necessity of shortening the duck hunting seasons or lowering bag limits across the United States could be the result. Recently, a U.S. District Court judge issued a preliminary injunction enjoining FWS from allowing waterfowl hunting this fall in 22 counties of five states—unless these states agree to *require* hunters to use nontoxic steel shot there. But more is at stake. If the lead poisoning problem is not eliminated, we could lose the privilege to hunt ducks in the future. More than two million waterfowl deaths due to lead poisoning every year is a compelling reason to switch to nontoxic steel shot in areas of concentrated waterfowl hunting. □

WORM RIGS THAT WORK



By Larry Larsen

What is the most effective lure of all time for catching bass? Without a doubt, it has to be the plastic worm. This lure, rigged in various fashions, has been accountable for harvesting thousands of bass throughout the country since its inception a few decades ago.

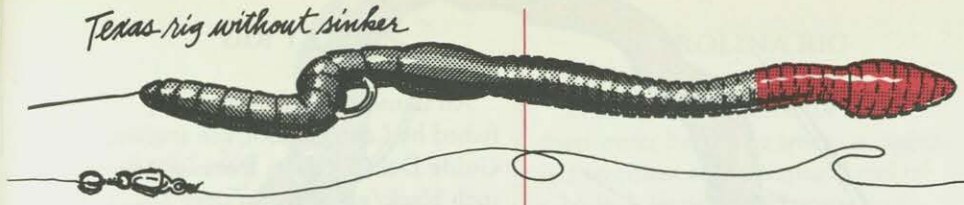
Why do worm rigs catch more than their share of bass? Most of the plastic wiggler rigs have one thing in common—a snake-like action. These rigs resemble the natural swimming and floating action of aquatic snakes and freshwater eels, and bass will usually hit these rigs with intent to devour them. They'll charge and smash with reckless abandon and many times they'll leave a wake behind the rig while they catch up to it, then explode on the surface. Due to this exertion, a high percentage of fish are hooked on these rigs.

The essential ingredient in a rig is, of course, the worm. Most rigs require a super-soft, plastic worm that a fooled bass will pick up and attempt to swallow. Porous baits which are scented or "salted" can provide additional incentive for the bass to hang on to the bait. The longer they eat on the plastic wiggler, the better the angler's chances of catching them.

The most popular sizes of worms range from six- to-eight inches These lengths will attract keeper bass in most waters under most conditions. When getting "short" strikes, most experts will switch to a shorter-length worm, such as a four-incher. This can be done by simply cutting off the front few inches, leaving a desired length. Of course, you can carry enough of the right size in the tacklebox for such emergencies.

Plastic worms are formed in different ways. Like the aquatic creatures that they imitate, some have legs and feet (a la salamanders) while others have thin, "swimming" curled tails. Still others have long tentacles, split tails, curled arms, paddle tails, mid-body twists, hollow bodies, warts, threads, ridges and even "crayfish" tails. They come in several hundred color schemes and include blood lines, metalflake glitter, fluorescent, opaque and solid options.

The Creme Scoundrel, Norman Snatrix and Mann Augertail and similar lures are some of the most popular worms for the various possible rigs. The Fishing Worm Salty Sensation, Worth Hawg Hackle and Ditto Gatortail all have tremendous regional followings. Other worm manufacturers are producing variations which attract the attention of bass chasers throughout the country.



SURFACE ACTION

The surface exploded and I turned to look at the action. My fishing partner, Steve Hamman, reared back. A chunky five-pounder immediately hit the surface and I scampered for the landing net.

The largemouth dug for the hydrilla entanglement, but Steve's constant pressure brought him back near the surface. One more jump and I had him in the net. Steve slid the fish into the livewell next to the six-pounder I had caught earlier. Five other bass had also joined the big one before this, and the well was crowded.

"I caught that one on top, just bringing the worm across the grass," Steve commented. "Maybe they're taking worms on the surface now." Until then, we had been using Texas-rigged worms with one-quarter-ounce slip sinkers. The early morning action had ceased and the old pattern was not producing.

Three casts later, Steve took another bass on the quickly-reeled, surface worm. He then took the sinker off his rig and started swimming the worm back to the boat, still at a rapid pace, and caught another four-pounder.

I quickly cut off my sinker and rerigged. My second cast hit the water and my rapid retrieve had barely begun when the surface boiled. I lowered the rod tip, gave the bass two seconds to grab it, then set the hook. A three-pounder was lying in our net shortly thereafter. Four casts later, Steve added a five-pounder and the action continued for another 30 minutes.

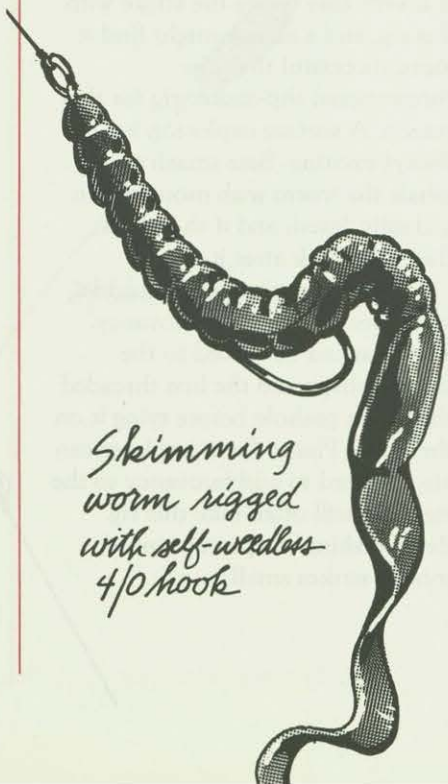
Excluding smaller bass, we landed 16 that day before the wind really began blowing and the sun came out for good. The weather had been windy and cloudy most of the day. Light rain had fallen a couple of times as a front moved through the area.

SKIMMING WORM

We used long, nine- and ten-inch plastic worms in black and purple without a weight during most of the day. I found the Creme Shimmy Granny to be my ticket. The nine-inch worm has plenty of bulk for casting without weight and a wide "floppy" tail to wag as it skims the surface on the retrieve.

Steve termed this method the "Skimming Worm," and both of us agreed it was a success that day. We have used the rig since and it continues to be a deadly method. The long worm with a self-weedless 4/0 worm hook is cast out as far as possible over hydrilla or other submerged aquatic plants, and the retrieve is started prior to its hitting the water, similar to buzzing a spinnerbait.

Most strikes will be seen, and we found a slight pause of two seconds or so to be best before setting the hook. Too quick a set usually results in lost fish. Seldom do bass spit out a lure they've chased so hard. If they are feeding that actively, they'll hang on.



SWIMMING WORM

I learned of this technique several years ago, but I didn't grasp its effectiveness until a couple of space-coast bass anglers talked me into trying it. I had spent the morning on a private lake and both anglers had several bass each to my two. At lunch I rerigged with the swimming worm at their instruction.

The rig consists of a swivel about 12 inches in front of a No. 2 straight-shanked bait hook and a threaded six-inch Creme Scoundrel worm. The swivel prevents line twists as the worm twirls back to the boat on the retrieve, and it also adds a little weight for casting purposes.

The only swimming worm that works in Florida lakes, according to my teachers, is the purple Scoundrel with glo-pink tail. The body is tapered to the end of the tail on this worm, and the floppy tail of other worms would only hinder the swimming motion of the rig—at least, that's their explanation. I've found them to be right.

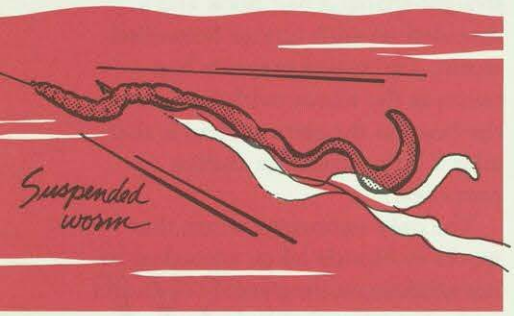
I started using the rig after the sandwich break and had three fish on the first four casts. I was catching up to them fast as I put four more bass in the livewell during the next 30 minutes, before the wind got us again. There was a 25 mile-per-hour blow that had already limited us to a small canal, which was hard to fish because its barren banks did not contain any wind-blocking cover. But I learned plenty before we quit.

The worm is threaded along the shank and the barb is brought out about one inch down the worm, so that the only thing showing is the exposed barb. The eye of the hook rests just inside the worm's head and the worm's body makes a "kink" where it follows the curve of the hook's bend.

The sizes of the hook and of the swivel should be judged on their ▷

weight. A small, thin worm is best, and a 20-pound-test leader between the hook and swivel will keep wear and twist in that section to a minimum.

I believe the real key to the effectiveness of this rig is that the bass do not feel resistance when they take the lure. It is easier to be a line watcher with the swimming worm, and that's what successful worming is all about. I think many times a bass feels the slip sinker in a conventional rig and spits it out quickly. With this rig, they'll usually grab the tail, then inhale it and latch on to the whole thing. Thus, a second or two pause is best before setting the hook.

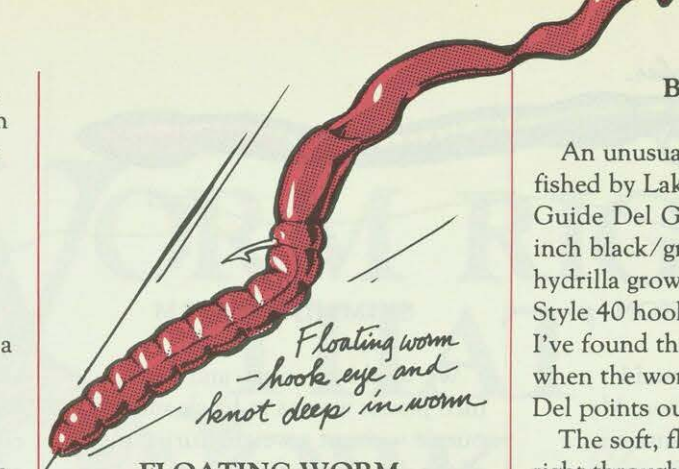


SUSPENDED WORM

A seven- or eight-inch worm has almost a neutral buoyancy with a 3/0 straight-shanked worm hook imbedded in it. If it is twitched and jerked slowly, it can be brought across or just under the surface of the water with enticing action. The worm will settle toward the bottom very slowly and can be worked at an intermediate depth.

The hook point is left exposed with very little difficulty occurring around hang-ups. The most productive depth is just under the surface where the angler can usually see the bass as it strikes.

The slow, methodical retrieve is much different from the buzzing-type, all-out retrieve of the skimming rig mentioned earlier. Rather than instinctive and impulsive strikes, bass strikes occurring on this rig will be premeditated. The fish will have a moment to think about the wiggling going on in front of its nose before the lure is out of sight.



FLOATING WORM

Another extremely effective rig is the "floating worm" which is worked on the surface in slow jerks. A high-buoyancy worm in a seven- or eight-inch length is preferred and is used in conjunction with a light, gold-plated wire hook (2/0 size). This combination will float well on the surface and it is deadly.

Sometimes termed the "Florida-rig," it can be slowly snaked across the surface and stopped periodically to lie motionless. The hook should be imbedded in the worm Texas-style when fishing heavy cover. It can be positioned farther down the worm's body than most rigs and when this is done it adds to its balance. Unlike the other rigs, the hook eye and knot are not exposed.

Large crappie hooks can be used, but if you're expecting large bass, keep the tackle in mind when you have one on and play it accordingly. It is very easy to see the strike with this rig, and a novice might find it more successful than the conventional slip-sinker rig for that reason. A surface explosion is always exciting. Bass smash and inhale the worm with mouth open and gills flared, and if they miss, they'll be back after it.

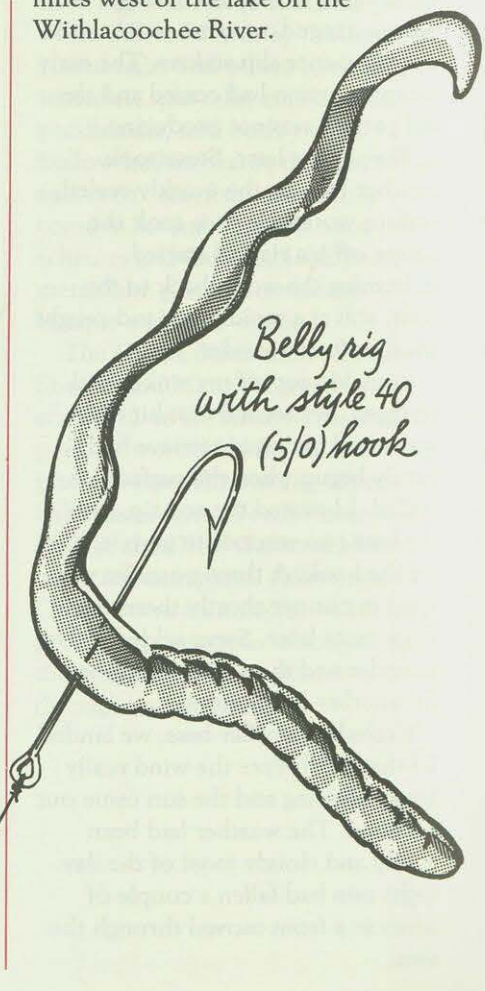
Some experienced anglers add a small float to increase buoyancy. The float can be carved to the desired shape and the line threaded through a pinhole before tying it on the hook. Plastic foam implants can also be used to add buoyancy to the rig. Bass will often take this rig deep, making the percentage of missed strikes small.

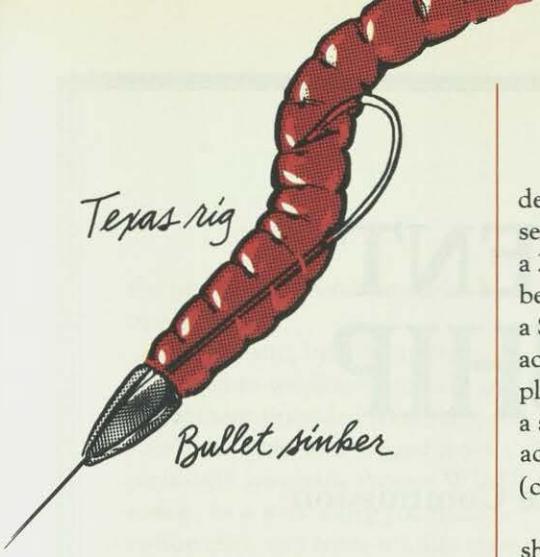
BELLY RIG

An unusual rig is successfully fished by Lake Panasoffkee anglers. Guide Del Goodwin tosses a seven-inch black/grape worm over heavy hydrilla growth. "An Eagle Claw, Style 40 hook (5/0) is the only one I've found that won't twist your line when the worm is hooked like this," Del points out.

The soft, floating worm is hooked right through the diameter of the worm, at a point midway down from the head. The hook, with draped worm is cast without weight, out over the eelgrass and hydrilla beds, then slowly reeled back to the boat. If the worm is correctly hooked through the middle, the retrieve will not cause the line to twist.

Surprisingly, this rig with the hook point exposed will seldom grab submerged weeds and hang up. This worm rig was responsible for Del taking a limit of 10 bass (that weighed a total of 75 pounds) from the Jumper Creek area, a couple of miles west of the lake off the Withlacoochee River.





TEXAS RIG

The famous slip-sinker worm rig is the most popular of all the variations. It is a self-weedless rig (the hook point is turned into the worm) developed so anglers can fish in heavy cover. Bullet-shaped sinkers of various sizes are used for depth control. Both the action of the worm and the angler's sensitivity are enhanced by use of the lighter weights. The bass will feel less drag with a 1/16-ounce weight than with 1/2-ounce sinker in front of the worm.

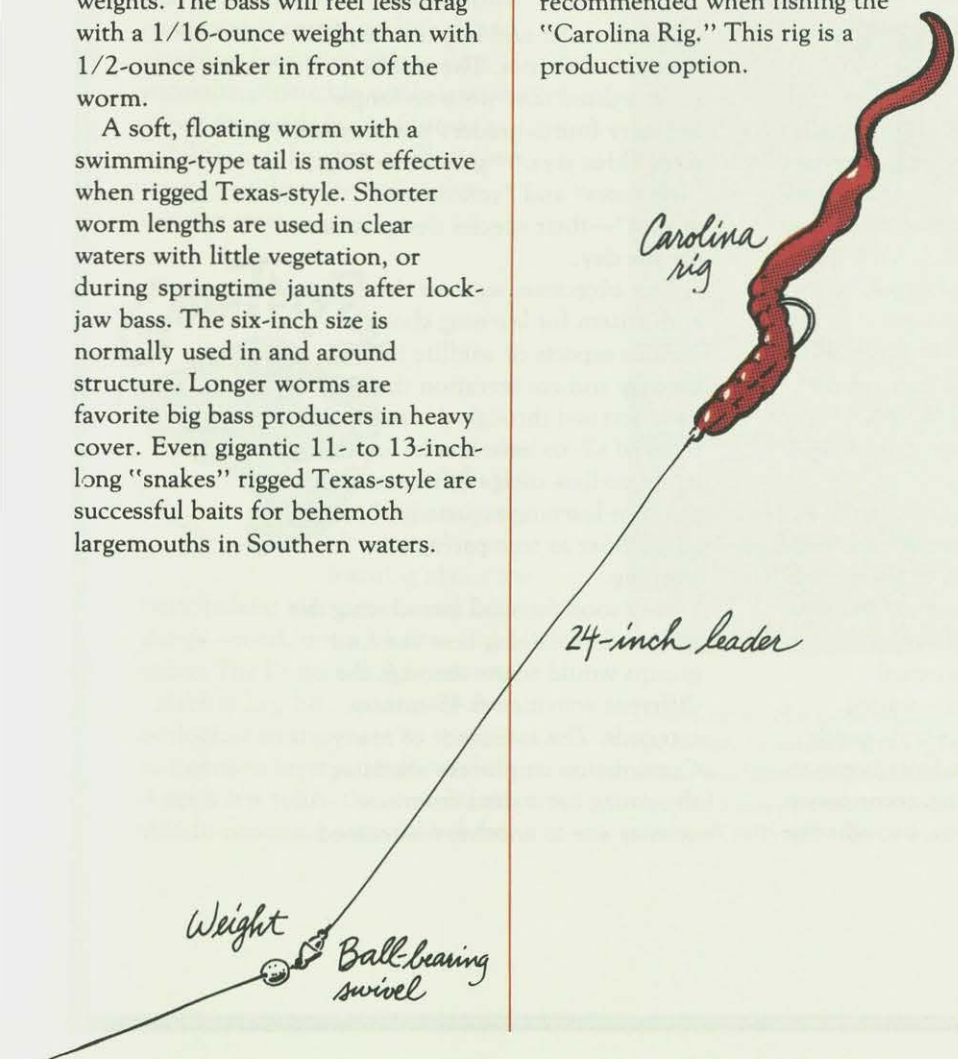
A soft, floating worm with a swimming-type tail is most effective when rigged Texas-style. Shorter worm lengths are used in clear waters with little vegetation, or during springtime jaunts after lockjaw bass. The six-inch size is normally used in and around structure. Longer worms are favorite big bass producers in heavy cover. Even gigantic 11- to 13-inch-long "snakes" rigged Texas-style are successful baits for behemoth largemouths in Southern waters.

CAROLINA RIG

This rig is often used for deep-water bass. The worm is rigged self-weedless at the terminal end of a 24-inch leader. The connection between the leader and main line is a Sampo ball-bearing swivel which acts as a stop for the sliding sinker placed above. The worm should be a super-buoyant variety or have the addition of plastic foam implants (chips).

The weights can be bullet- or egg-shaped and normally run 1/2 to 3/4 of an ounce. The heavy sinker is used to get the worm down, to depths beyond 20 feet, and keep it there. The floating worm is buoyant enough to float over obstacles. If little cover exists, the hook point can be left exposed.

This rig is most often used along deep, submerged islands or humps during the hottest summer days. Due to the bass feeling the heavy weight drag, a quick hook set is recommended when fishing the "Carolina Rig." This rig is a productive option.



OTHER WEIGHTED RIGS

There are numerous other ways to rig a plastic worm which are effective on bass under certain conditions. The jig-and-worm combo is deadly in waters having relatively clean bottom conditions. Various types of jig heads may be employed, such as the round, bullet-shape, or stand-up. The latter allows the worm to float upward for greater visibility to the bass. The experts claim this type of head results in a higher percentage of hooked fish than the regular-type jig head.

The worm can be strung on various weedless-type jig heads, such as those having wire or nylon weed guards. The worm can be rigged self-weedless on a jig head, similar to the Texas-rigging when fished in submerged "jungles." A small split shot can be added—either some 12 inches forward of the hook or right to the hook (pinched on at the bend)—when rigged self-weedless. The weighted worm rigs allow you to fish faster and deeper than those without a weight.

The plastic worm is the one lure that most great bass anglers would put in their pockets if they could carry only one. It can be rigged and fished dozens of different ways: on the surface, at the bottom or in between. It can be made to swim, slither, crawl, "die" bounce or buzz. The versatile, snake-like plastic can even be used as a trailer on spoons, spinner baits and crank baits. The limits of its use are probably not yet totally defined. □

EDITOR'S NOTE: Although Larry Larsen catches many bass, he usually releases all that weigh more than three pounds, and those less than 15 inches long. He has been a strong proponent of catch and release for several years.

AN EXCELLENT PARTNERSHIP

Elementary School Students and the Commission Fulfill a Contract

By Judy Gillan and Roy King
Photographs By John Waters Jr.

The day finally arrived! Our plans became reality as we watched Oak Ridge Elementary School's bus roll toward us, filled with anxious fourth-graders. The big, yellow bus bobbed and swayed down the narrow, dirt road of the Joe Budd Wildlife Management Area like an animated woodland caricature.

Eager to embark on the day's adventure, 50 youngsters clambered from the bus into the environmental center where 10 Game and Fresh Water Fish Commission employees—environmental educators for the day—waited.

Once seated Indian-style inside the log cabin, the students began to settle down. Roy King, commission education coordinator, brought the group to order and began to explain the day's activities. The children soon realized they were no longer ordinary fourth-graders but, instead, were "blue jays," "green tree frogs," "red foxes" and "yellow rat snakes"—their species designations for the day.

Our objectives were to share our enthusiasm for learning about various aspects of wildlife biology, ecology and conservation that we have accrued through the years and, most of all, to have lots of fun doing it. Regardless of age differences, this outdoor learning experience brought us together as true partners in learning.

Roy soon finished introducing the staff and explaining how the four groups would rotate through the different activities at 45-minute intervals. The assistance of many Commission employees shuttling the young naturalists from one activity site to another maintained

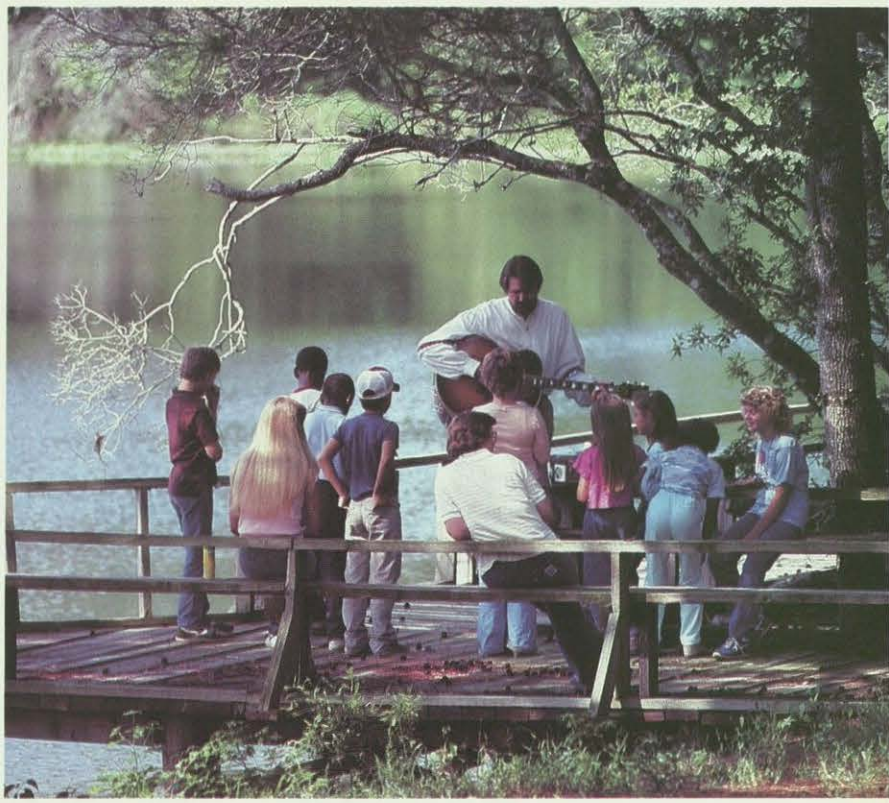
the program's overall smooth operation.

Our holistic, interdisciplinary approach to wildlife education and enrichment provided something for everyone. Activities ranged from a physically involving Project WILD* lesson, to a walk along Joe Budd's nature trail, and from wildlife music and art appreciation to firearm safety and outdoor ethics. At first, it was difficult to hold the attention of so many wide-eyed youngsters because so much was happening around them. The students were no longer confined by classroom walls but, instead, were immersed in the diversity of nature's outdoors.

Down by the lake, Dale Crider, the Commission's endangered species information specialist, played his guitar and sang original songs about native wildlife. Hand clapping, foot stomping, young naturalists joined in while learning about the perils facing Florida's wildlife and the choices Floridians must consider now and in the coming years.

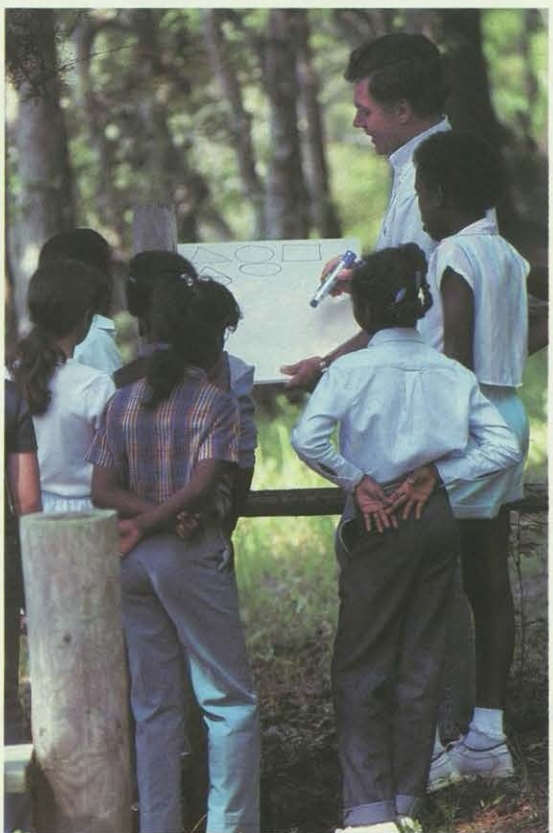
Farther up the hill, the "green tree frogs" were learning about the basic habitat elements for all living things—food, water, shelter and space. The Project WILD activity, "Habitat Lap Sit," addresses the ecological arrangement of these elements to meet wildlife needs. After a few trials, the students were able to construct a model habitat which exhibited the basic ecological necessities for a balanced habitat.

John Roberge, art editor for FLORIDA WILDLIFE, and Judy Gillan, nongame education coordinator, joined forces to introduce the students to art and nature appreciation. While John's share of the "red foxes" moved to his outdoor art studio, Judy's youngsters sprayed themselves with insect repellent, hoping to leave all the redbugs where they belong—along the nature trail. ▷



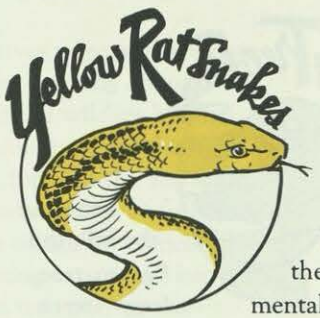
Dale Crider, the Commission's endangered species information specialist, is known throughout Florida for his original songs about wildlife and the interactions of humans with wildlife. On the field day, he entertained groups of schoolchildren in this tranquil setting beside a manmade lake at Joe Budd.

Education coordinator Roy King conducted Project WILD exercises to teach the concepts of wildlife habitat (above). Art editor John Roberge taught students about shapes and lines found in nature (below). Nongame education coordinator Judy Gillan took students on a tour down a wooded nature trail, (next page).



John explained wildlife drawing techniques based on simple shapes and color perception, demonstrating on a portable easel as he spoke. Art came to life before the students' eyes as he emphasized that most anyone can sketch nature with these basic techniques.

On the nature trail, Judy and her part of the group were busy observing, identifying and examining first-hand many examples of Joe Budd's flora and fauna. The various trees, herbs and forbes provide cover for birds, egg-laden spiders, skinks and a harmless black racer snake which startled, then fascinated the youngsters when it slithered away from the commotion. Whether afraid or just plain curious, the students were wide-eyed and attentive to the snake. Commission biologist Eddie White pulled up a sassafras root for all of the students to sniff. Jerry Banks, the Commission's assistant executive director, provided hints on wildlife identification for the students.



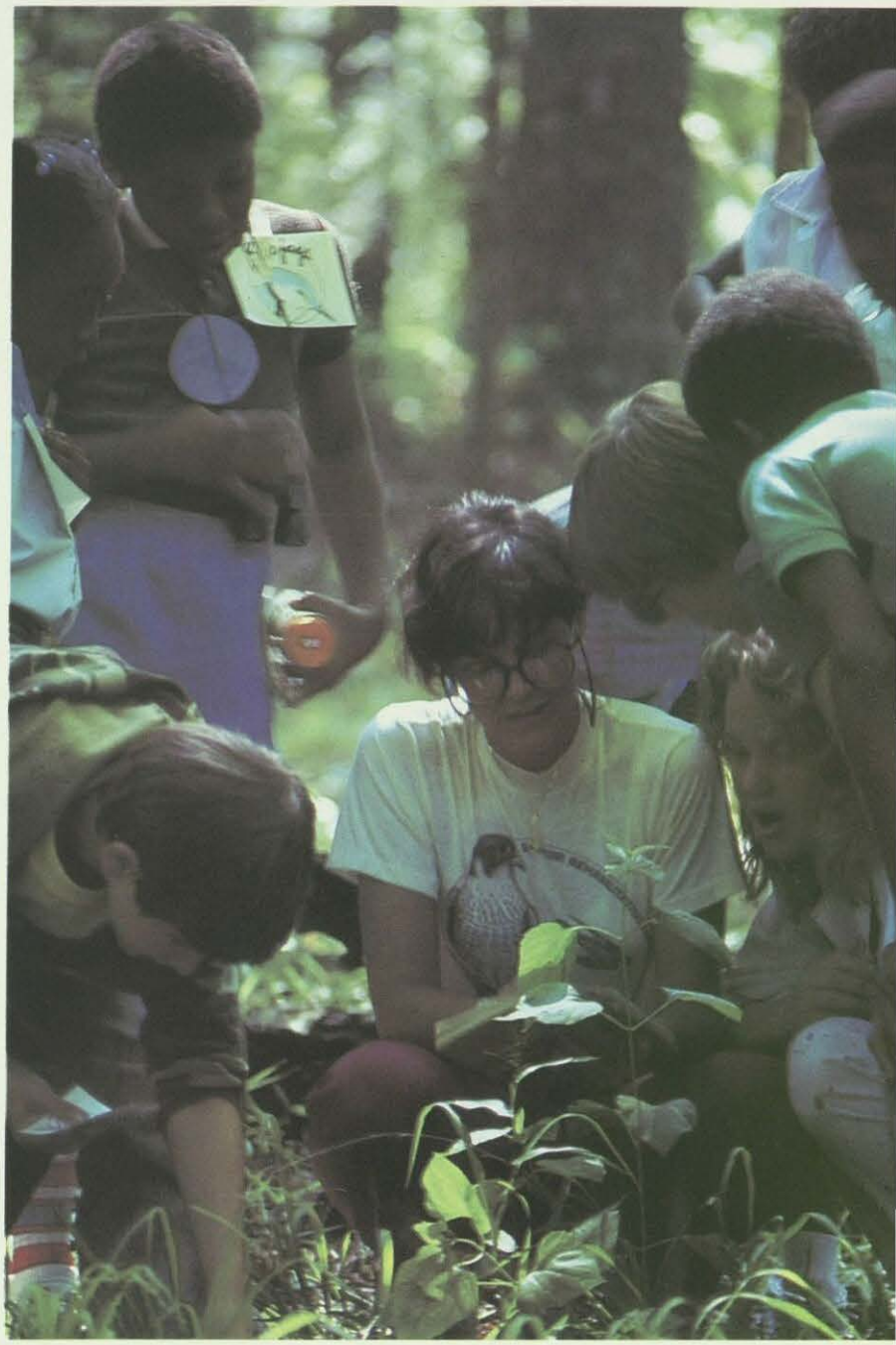
Back in the environmental center, the "yellow rat snakes" were learning about outdoor ethics and firearm safety from Pat Zaic, a Commission employee who also serves as a volunteer Hunter Education Program instructor. The students learned that all outdoor enthusiasts have a responsibility for the care of our natural environment

and they also learned some rules about gun safety and the law.

By noon, all the activities, fresh air and sunshine had helped everyone work up an appetite. We all relaxed and ate our lunches outside on the cabin deck and around the grounds. Soon, it was time to say good-bye. It was a fantastic day for us, the Oak Ridge teachers and, above all, the fourth-graders. Although the children's interests varied, their enthusiasm was unparalleled. Each student went home with new experiences to remember for years to come.

As the present school year continues, employees of the Commission anticipate continued involvement with our present Partner for Excellence, Oak Ridge Elementary School. Together, we know that education is the key to understanding.

The Commission's role in Florida's "Partners for Excellence" program began in the fall of 1984 when Governor Bob Graham signed a resolution declaring the 1984-85 school year as the "Year of Educational Advancement and Volunteerism." Now, more than 130 Leon County businesses and government agencies are participating as "Partners" in cooperation with Leon County schools. During the 1984-85 school year, Commission employees volunteered more than 300 hours to this program. □



*EDITOR'S NOTE: Project WILD is a supplementary, conservation and environmental education program which emphasizes wildlife and its habitats. The Commission offers free activity guides and training through workshop participation to educators and others who may be interested in Project WILD.

Ray Stanyard-Photograph

Hugh Bradford Nicholson

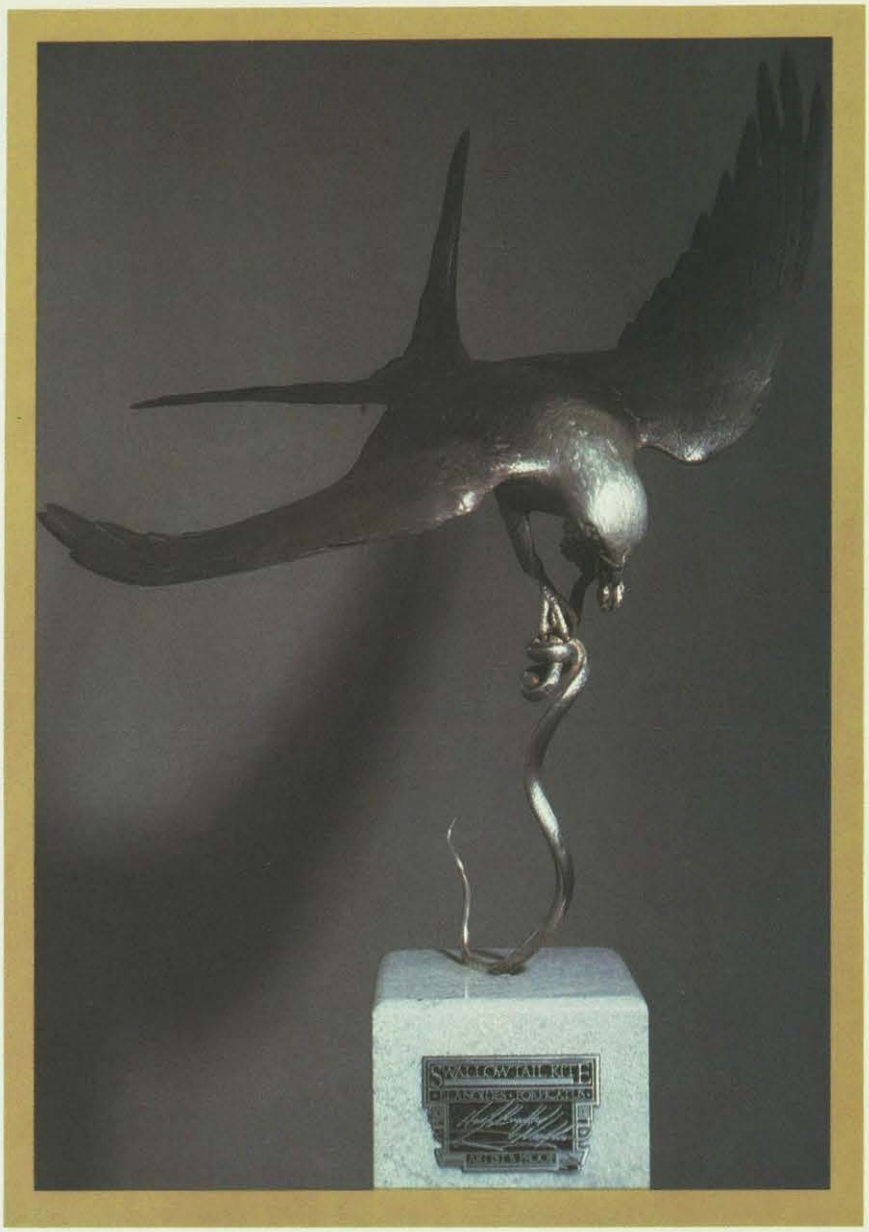
SCULPTOR

Hugh Bradford Nicholson has practiced many forms of art, including painting, drawing and woodworking. Recently, however, he has become recognized for his bronze and silver sculptures of Florida's wildlife species. The details of his most recent works, which include the Florida panther, the swallow-tailed kite and the manatee, are so fine that you must examine them personally to fully appreciate their beauty.

Nicholson explains, "I want to represent these creatures in their best and most noble forms." He feels that it takes a "character sketch" in his medium to best do this job.

"Also," he says, "I seek most to cause a reaction in those who view my works. I want to convey a sense of worth in each animal sculpted. I try to do this to the ▷

Photographs By John Waters Jr.



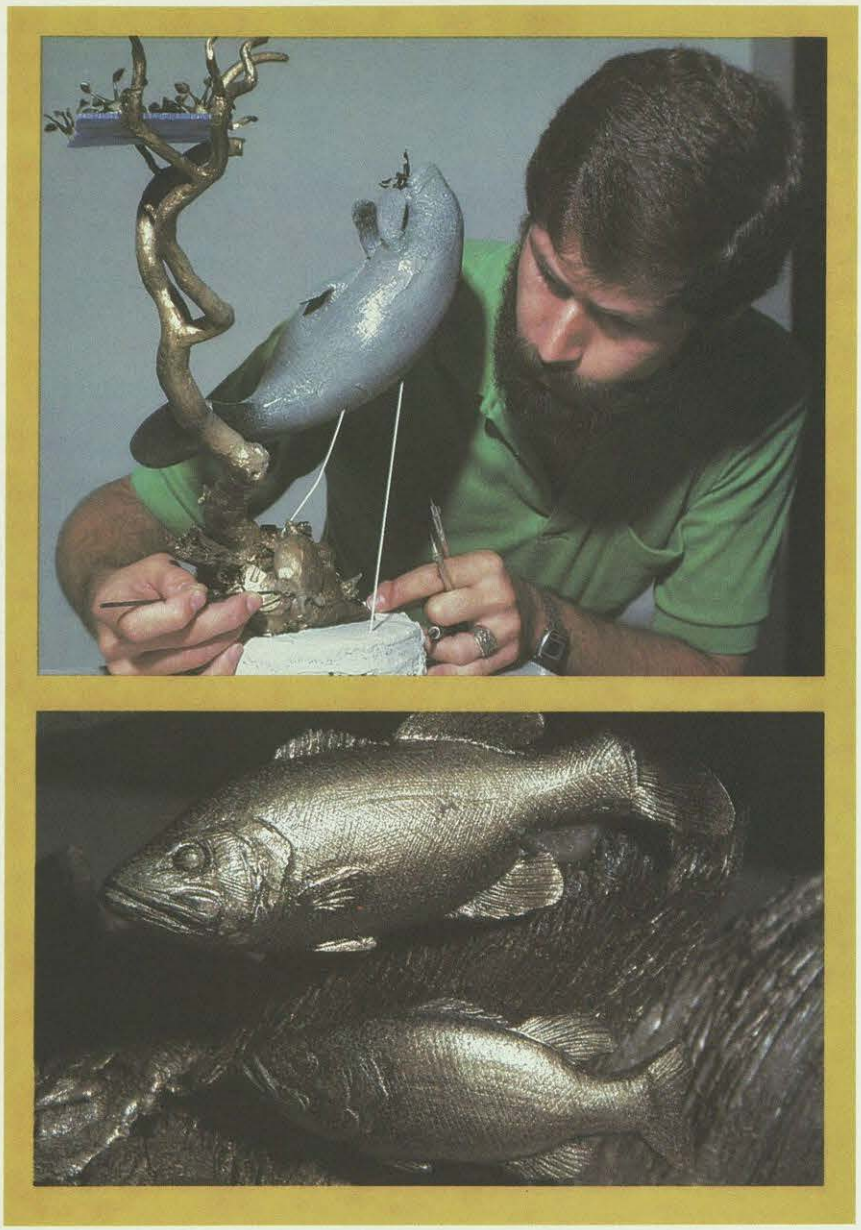
point that its possibility for extinction causes the viewer to feel a personal sense of loss if this should happen."

His first major sculpture (cast in bronze) was a wild turkey in flight. Every feather was in place and the natural forms of its long neck, strong wings and powerful feet were clearly visible in the finished work. Nicholson said this project provided him with the opportunity to experiment and learn new things about working with the wide range of materials he used to create the original sculpture.

Dental grade and jeweler's grade waxes, which arrive in solid blocks, are a major material for sculpting the original work. These waxes are considerably harder and have higher melting points than ordinary candle wax. Once a sculpture is formed into a wax original, a mold must be fitted to it. Later, the wax will be melted from the mold and the mold used to cast a perfect metal copy of the wax form.

Nicholson has made extensive studies of the biology and natural characters of the wildlife he has sculpted. He not only succeeds in shaping the animal into a minature form of the real thing, but he also takes considerable time to sculpt a natural representation of the habitat in which his subject would normally be found.

His bronze sculpture of a Florida panther is mounted on a base which replicates the hardwood hammock habitat where this endangered feline lives. Leaves of magnolia, grape and palmetto appear just as they



naturally fall onto the hammock floor, near a lily-covered pool of water.

The swallow-tailed kite, which was initially cast in sterling silver, seems to be lifting up into the sky with its next meal—a small rough green snake—clutched in its talons. The snake is partially coiled and bites harmlessly at the raptor's leg, with no chance for escape.

A work in progress, showing a manatee cow with her nursing calf, is still in the initial stages of formation. Yet, the wax model already shows much of the Nicholson style. The wrinkles around the eyes and nose, the ventral slit and the plump buoyancy this species has in water are captured in the wax form.

Largemouth bass appear to swim at the base of a tree limb which suspends the manatees over a bottom cluttered with mastadon teeth and bones, suggesting a complex connection between this endangered species and its natural world. As a symbol of the negative impact human interaction has had on the gentile sea cow, the bottom also shows 20th Century trash—bottles and cans.

Nicholson is a very talented artist in his present medium, and as time goes on, his work will undoubtedly be included when the best of the best are compared and admired. His metal sculptures are durable, attention holding and limited in numbers.

—John Waters Jr.

The following eight pages show the final results of Categories C (fish, amphibians, invertebrates and reptiles) and D (hunting and fishing in Florida) of FLORIDA WILDLIFE'S 1985 photo contest. The overall results are very gratifying. We had to register, categorize and judge 809 photographs. This was a formidable undertaking for the staff.

Viewing all those images was a joy, but judging them was a task. It called for a discriminating application of values, and culminated in hair-splitting decisions to determine the winners. First Place winner for Category C is Walter Dawn's (Miami, Florida) photograph of a mantis and its prey, a lubber grasshopper (front cover and at left). His exciting close-up takes us into the remorseless world of miniature predators.

CATEGORY C SECOND PLACE

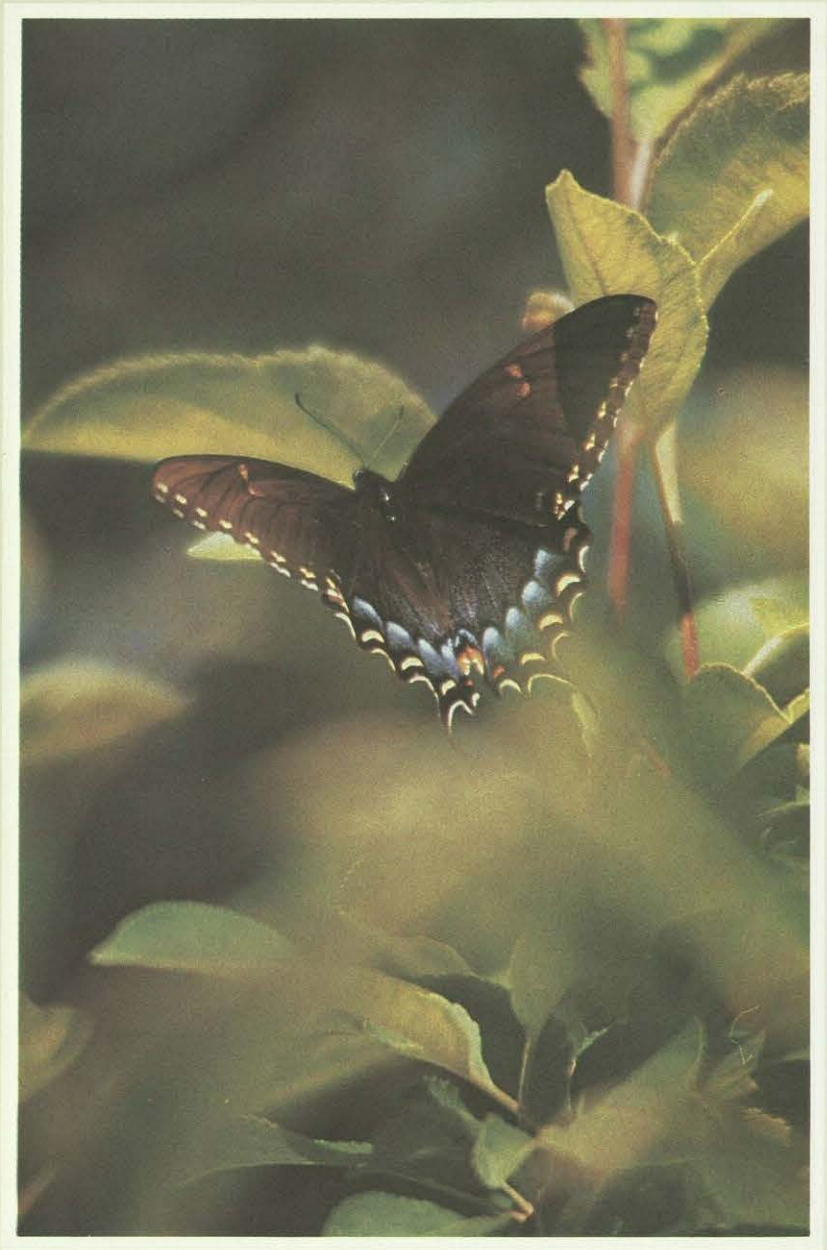
Sunning Alligators
Mark Thomas; Hollywood, Florida

CATEGORY C THIRD PLACE

Dusky Pigmy Rattlesnake
Walter Dawn; Miami, Florida

CATEGORY C HONORABLE MENTION

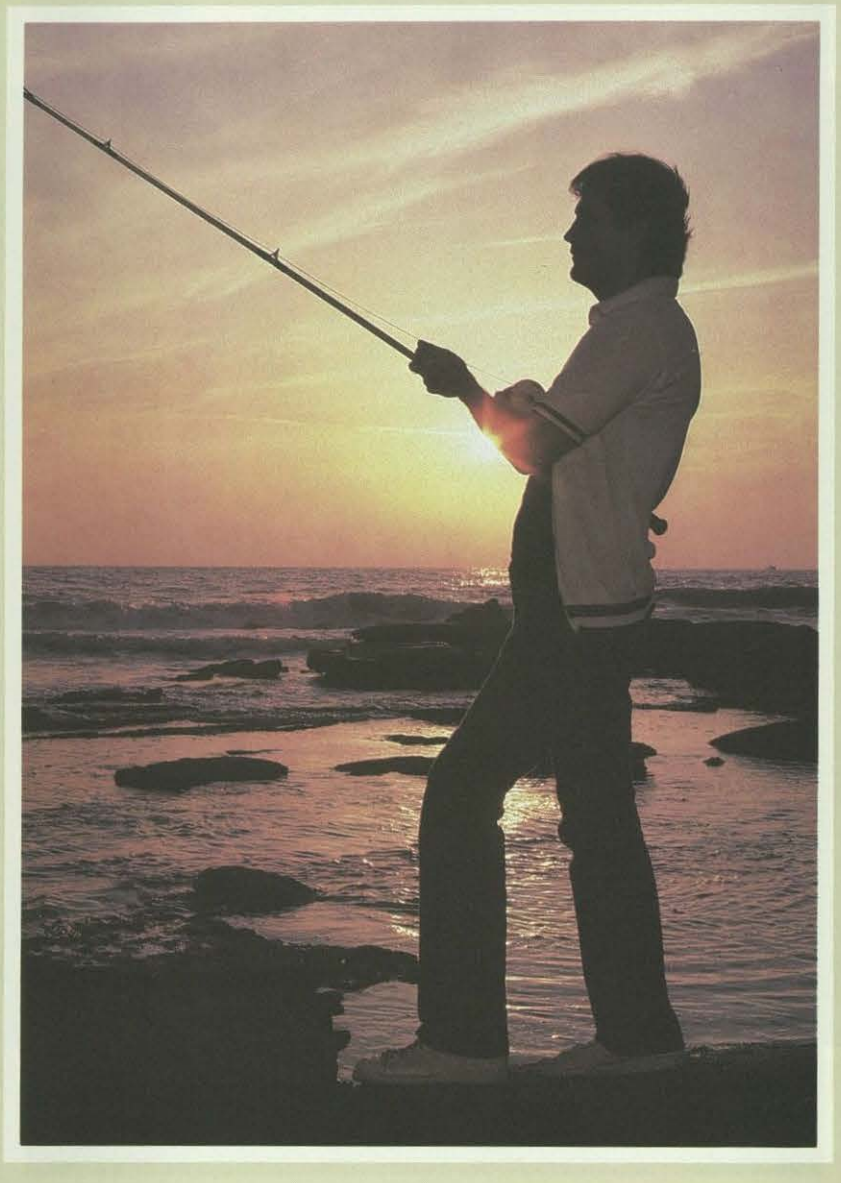
Honeybee Taking Pollen from a Bumblebee
Walter Dawn; Miami, Florida



CATEGORY C HONORABLE MENTION

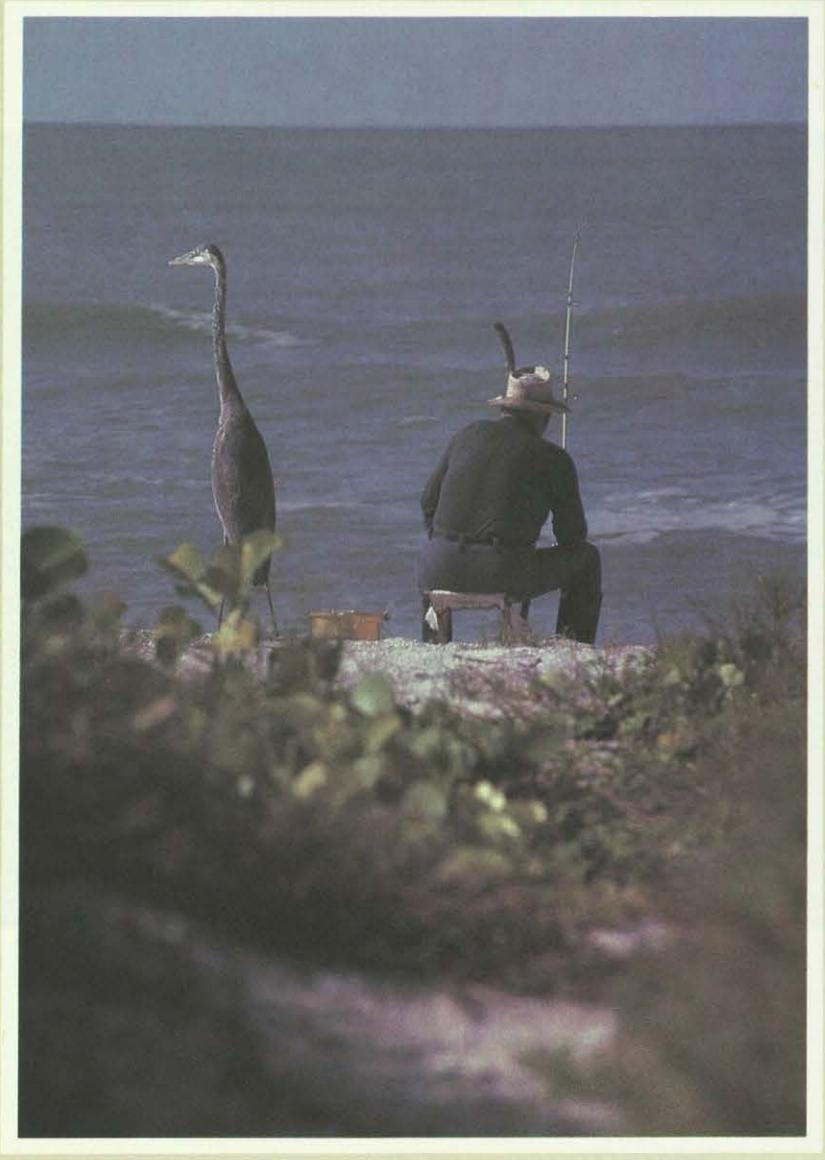
Tiger Swallowtail (dark phase)
Terry L. Taylor; Jacksonville, Florida

We were also pleased with the wide range of interpretation shown for hunting and fishing in the entries for Category D. Photos such as the evocative essay on duck hunting (back cover and at left), taken by First Place winner Clay Stevens of Okeechobee, Florida, transported the judges from a darkened room to the dampness and chill of a spectacular dawn on a Florida lake.



CATEGORY D SECOND PLACE

Fisherman Silhouette
Patricia Hanbery; Bradenton, Florida

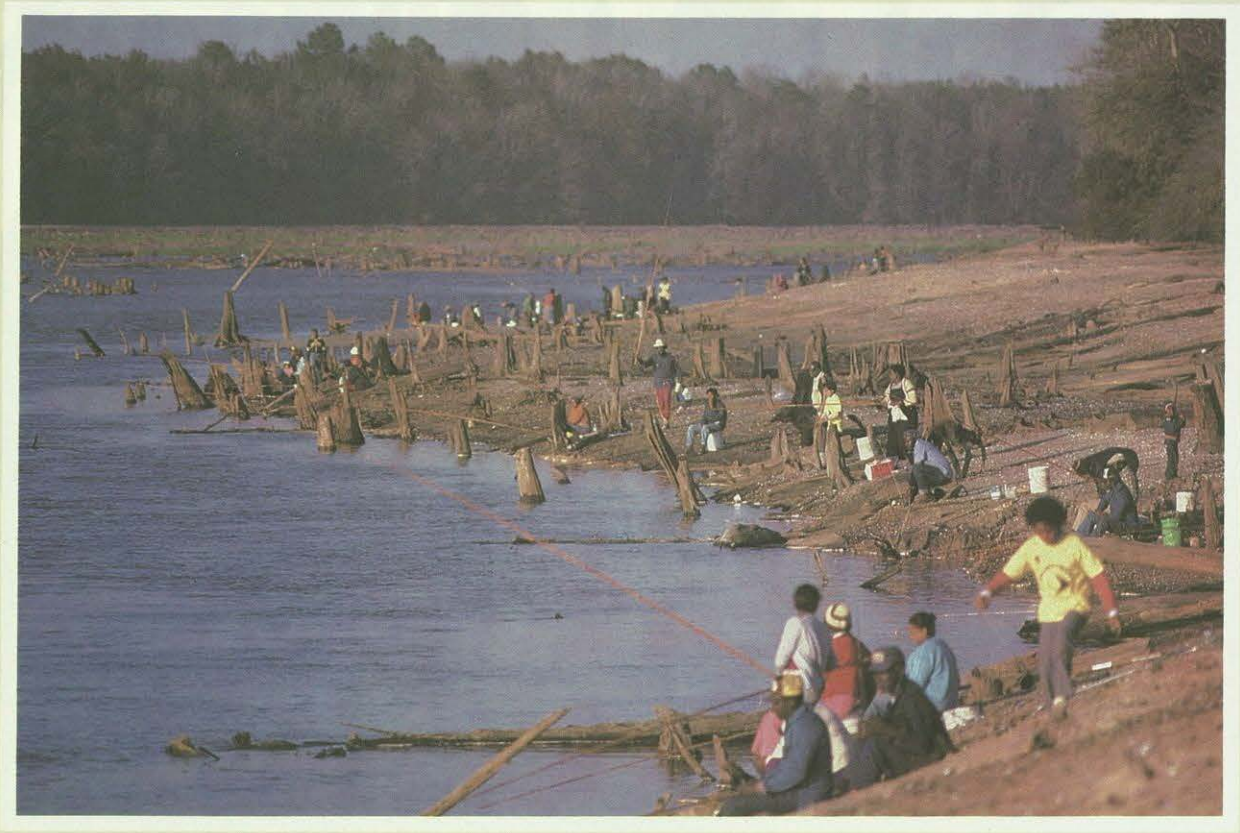


CATEGORY D THIRD PLACE

Two Land Animals Waiting for a Fish
Ron Scheeley; Sarasota, Florida

CATEGORY D HONORABLE MENTION

Sellers Lake, Ocala National Forest
Tani Miller; Ormond Beach, Florida

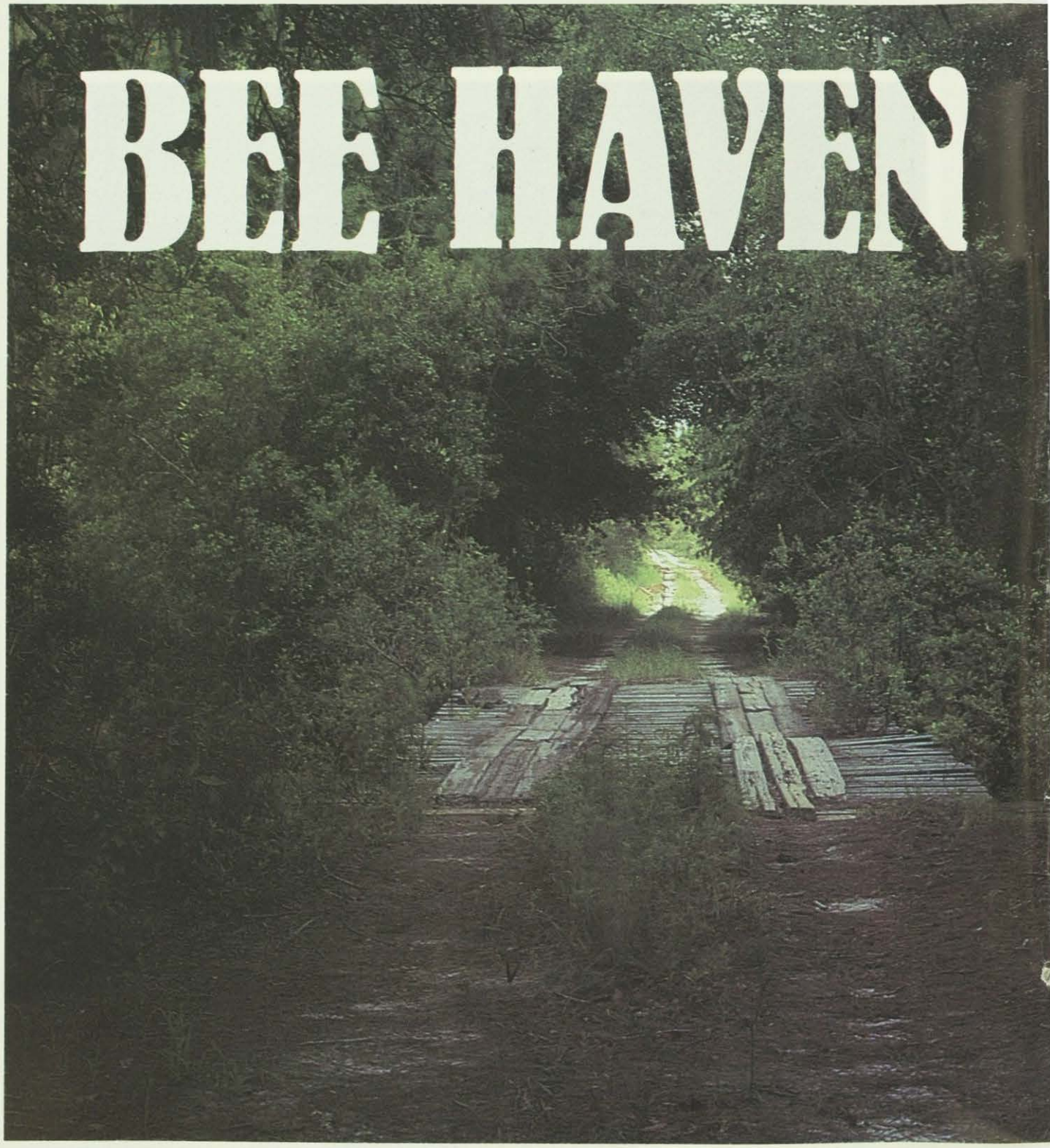


CATEGORY D HONORABLE MENTION

Lake Talquin Drawdown
Dana C. Bryan; Tallahassee, Florida

An Endangered Wetland?

By Perry Oldenburg



Perry Oldenburg-Photograph

Steve Stafford-Photograph

Dave Maehr-Photograph

BAY

Bee Haven Bay is a thick, virtually impenetrable swamp, teeming with biting and stinging insects, poisonous and nonpoisonous snakes and all sorts of other wildlife. Until recently, the value and functions of wetlands such as this one have been largely unrecognized, but recently proposed mining of the phosphate reserves (which lie under a portion of this wetland) by Occidental Agricultural Chemical Inc. (OXY) has brought Bee Haven Bay into the center of controversy. The controversy concerns environmental and economic values of this natural wetland area.

Biologists, hydrologists, economists, foresters and other professionals have been asked to assess these values, but is it really possible to properly assess all the values of these 6,400 acres? Nevertheless, the functions and resources of Bee Haven Bay must be evaluated so that a decision can be reached as to the ultimate fate of the wetland.

Bee Haven Bay lies in the drainage basin of the Suwannee River in rural, eastern Hamilton County. People living in this area today rely heavily on their land resources because they are primarily engaged in agriculture, forestry and mining. In years past, swamps such as Bee Haven Bay played a more visibly important role in the livelihood, language and culture of the local populus.

The origin of the name "Bee Haven," or "*Bee Heaven*" as it is referred to by some folks, is a bit of a mystery. One possibility is that the name could have been given to the large bay swamp by early beekeepers who set their hives along the bay each year in March and April. The honey flow is high then. Even now beekeepers harvest many gallons of delicious honey, made from the nectar which millions of bees gather from Bee Haven's flowering tupelo, palmetto and gallberry. One written historical account says early settlers named the wetland "Bee Haven Bay" because of its many wild bee trees, from which they harvested much honey. But who knows, maybe an unfortunate woodsman gave the bay swamp its name after a *stinging* encounter with a swarm of honeybees.

Man has been the major influence on Bee Haven Bay for the past two or three hundred years, if not longer. Old-timers tell of the "wild Spanish cattle" which once roamed freely throughout the swamp. As recently as 50 years ago, these cattle were hunted for their meat and hides. The cattle's grazing habits, regular burning by settlers of the time and the occurrence of natural fires kept the bay swamp's understory cleared. The periodic burning enhanced the growth of tender grasses and forbs, and the cleared understory made it easier for hunting dogs to chase game such as ▷

Bee Haven Bay's 6,400 acres are under evaluation by the U.S. Army Corps of Engineers and the Florida Department of Environmental Regulation, to decide if Occidental Agricultural Chemical Inc. (OXY) will be permitted to mine the phosphate deposits which underlie much of this valuable wetland. This use of resources differs greatly from the bay's traditional honey gathering, hunting and forestry uses of the past two hundred years.

black bear, raccoons, wildcats, deer and other species found throughout the bay swamp.

Bee Haven Bay is the headwater wetland of Rocky Creek, a tributary of the great Suwannee River. The thick layer of leaves and other organic matter which lies on the floor of the bay, together with the root systems of a diverse association of wetland plants, filter the water which percolates into Rocky Creek and give it the acidic, brownish-color characteristic of the upper Suwannee River. The vital importance of these wetlands in filtering excess nutrients, sediments and pollutants from the waters which flow through them cannot be overemphasized.

The water levels in Bee Haven Bay were higher in the past than they are today. Old-timers say bream, warmouth and large bass were readily taken from the open ponds within the bay in years gone by. But since that time, drainage canals were dug through the southern part of Bee Haven Bay—in an unsuccessful attempt to mine peat. Drainage canals, dry wells and the dredging of Rocky Creek have resulted in a partial drainage of the northern part of Bee Haven Bay, and this drainage has significantly lowered average water levels in the bay, causing parts of the wetland to presently be abnormally dry.

The mosaic of plant communities in Bee Haven Bay range from mixed swamps and bayheads to dense, bushy swamps and more open marshes and ponds. The mixed swamps are generally dominated by mixtures of pond cypress, blackgum, sweet bay, red maple, loblolly bay, red bay and slash pine. The understory of these swamps may be fairly open or may be covered with a thick undergrowth of fetterbush, smilax and other shrubs and vines, as well as various ferns. Large parts of Bee Haven Bay are covered with young trees.

The bayhead plant community tends to be dominated by sweet bay, loblolly bay, red bay and other broad-leaved evergreens. Thick understories of dahoon holly, fetterbush, sweet pepperbush and wax myrtle grow below the trees.

Successional brushy wetlands are dominated by dense thickets of fetterbush, titi, buttonbush, sweet pepperbush and numerous other shrubs. Successional wetlands are those in transition from one plant community to another, more stable, plant community.

The mosaic of different plant communities which characterizes Bee Haven Bay is undoubtedly due in part to fire and logging activities during the past 200 years or so. Selective logging has transformed mixed cypress-bay-blackgum swamp into denser bay swamp. Dense undergrowths, like those found here, are usually reliable indicators that an area has been heavily logged.

Perry Oldenburg-Photograph

Pitcher plants grow in some areas of Bee Haven Bay. These carnivorous plants digest insects and other creatures which enter their tube-like stems.

Moderate or severe fires in past years may also have caused the mixed cypress-bay-blackgum swamps to grow into dense, brushy swamps. In dry periods, severe fires may burn enough undecayed peat to create a marsh or open pond from what formerly was a mixed forest swamp or dense, brushy swamp. The absence of fire in recent years accounts for the heavy understory throughout much of Bee Haven Bay. Without regular fires, the understory and leaf litter build up so that when fires do occur, they are more severe.

Flying in an airplane over Bee Haven Bay, one can see patches and long strands of herbaceous marsh or emergent wetlands interspersed throughout the area. These wetlands are most extensive in the southern part of the bay. The marshes are on top of thick layers of peat moss, which cause the "quaking earth" effect when one attempts to walk

Perry Oldenburg-Photograph

The Suwannee River receives much of the water which flows and percolates through the wetlands of Bee Haven Bay. Mining activities, even if in only part of the bay, will probably drain the wetlands adjacent to the mining operation. This will affect the natural water levels and flow system.

through them. The peat soil is usually moist and is often inundated by water.

Thick growths of Virginia chain fern, redroot and sedges cover these wetlands. Tunnels through these marshes and their piles of vegetation indicate the presence of small mammals such as the marsh rice rat and the round-tailed muskrat. These open, freshwater marshes also provide good stopover and foraging areas for migratory waterfowl, as well as potential nesting sites for Florida sandhill cranes.

Several species of pitcher plants grow throughout the open marshes of Bee Haven Bay. Insects in search of nectar enter the open "pitcher" of these insectivorous plants and become entrapped. The pitcher plant's digestive juices then dissolve and digest them. Entrapped insects provide valuable nutrients to the pitcher plants, which are lacking in the acid bogs where these plants grow.

Scattered ponds throughout Bee Haven Bay retain water throughout the year. These ponds are partly covered by floating aquatic plants and are also encroached upon by emergent plants such as pickerelweed, spatterdock and spoon flower. Thick mats of peat moss usually surround these ponds, and cypress trees and various shrubs tend to grow around the ponds as well as on islands within the ponds.

The open water provides valuable habitat for the Florida river otter, mink, beaver and other aquatic mammals. Numerous wading birds, such as black-crowned night herons, great egrets, great blue herons, white ibises and even occasional wood storks, forage in the open ponds. These colonial birds often nest nearby. The bay's perennial ponds are vital to wood ducks, which nest in nearby hollow trees.

On a walk through Bee Haven Bay, one briefly catches sight of tiny hooded warblers and prothonotary warblers flitting through the dense foliage. The sight of a great-crested flycatcher snatching insects is not uncommon within the bay swamp and the continuous song of the red-eyed vireo seems to be ever present.

Perry Oldenburg-Photograph

Scattered ponds throughout Bee Haven Bay retain water year-round. Thick mats of peat moss usually surround them, and cypress trees and other plants grow along the edges. Open water areas provide habitat for river otters, mink, wading birds and ducks.

These and numerous other songbirds, including the yellow-throated warbler, northern parula warbler, rufous-sided towhee, summer tanager, Carolina wren and eastern kingbird, nest in Bee Haven Bay.

Signs of the Florida black bear abound here too. Thickets of fetterbush, titi and other shrubs provide good escape cover and denning sites for black bears. The diverse swamp and marsh habitat provides bears with a seasonally varied food supply of saw palmetto berries, blackgum, gallberries, blackberries, insects, grubs, bee trees and the honey inside them, and an occasional armadillo or other small animal. The relative inaccessibility of the bay swamp makes it a haven for bears. In fact, the bay probably would have been more appropriately named *Bear Haven Bay*.

Occidental Agricultural Chemical Inc. (OXY) has proposed to mine the phosphate deposits underlying an estimated 2,140 acres of the Bee Haven Bay wetlands within the next 26 years. Because Bee Haven Bay is a continuous wetland, mining even a part of it would effectively drain the wetlands adjacent to the mining operation, and thus affect the natural water fluctuations of those areas of the bay. Although it is impossible to predict the overall impact of mining this wetland, one can be sure that it will be detrimental to many species of wild living things which presently inhabit Bee Haven Bay. Because of the technology involved, mining operations within the bay will destroy habitat, and increased human disturbance in this area will endanger the black bears living there.

OXY will be required to "reclaim," acre for acre, the wetlands they mine; however, no demonstrated reclamation techniques are presently known which will restore the types of emergent wetland communities and diverse swamp communities which now typify Bee Haven Bay. Changes in soil composition and ground structure—which mining will cause—will make restoration of these valuable wetlands to their former condition difficult or impossible. In addition, the current reclamation rules are insufficient in requiring any future so-called "reclaimed wetlands" to approach anything like the present state of this native wetland.

The U.S. Army Corps of Engineers and the Florida Department of Environmental Regulation will ultimately make a decision whether to permit or not permit OXY to mine the wetlands of Bee Haven Bay. On that decision may lie the future fate of the bay and the wildlife living here today. □

MANA

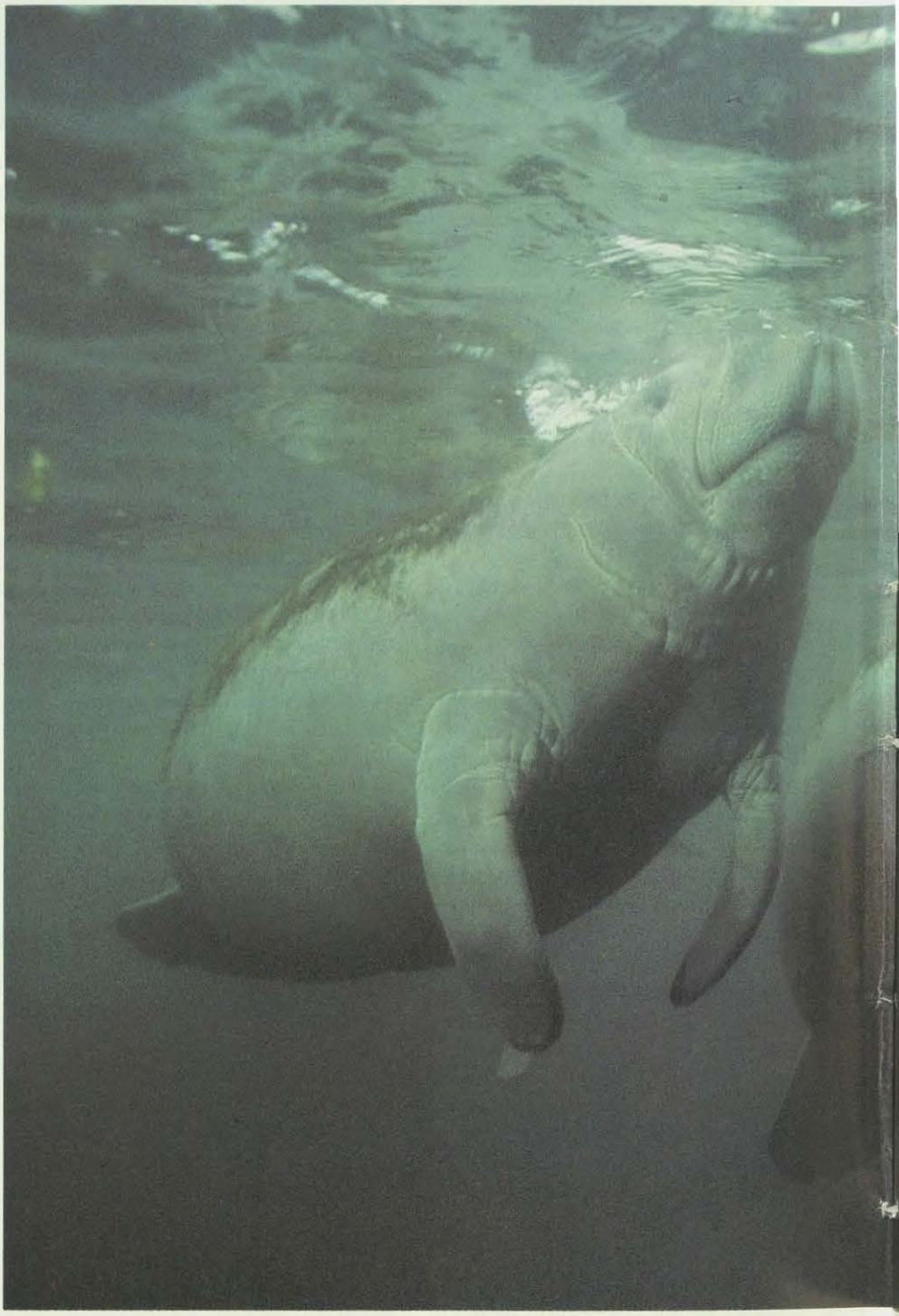
1985 may prove to be as bad as 1984, which was the worst year on record for the endangered Florida manatee (*Trichechus manatus latirostris*). By October, more than 100 deaths had already been logged. This approaches 1984's total of 131, the highest noted since researchers started keeping records 10 years ago.

The high mortality in 1984 was primarily due to an unusually cold spell which Florida experienced during late December and early January last year. However, interactions with humans continue to take their toll as well.

Powerboats continue to kill and maim manatees, and it is rare today to see an adult that is not scarred. Poaching and vandalism also cause occasional deaths, and harassment by curious divers and swimmers may contribute to deaths during cold weather by driving manatees away from the safety of warm water sources where they congregate in winter. This causes them to expend valuable energy stores in the process, which they need to maintain their body temperature.

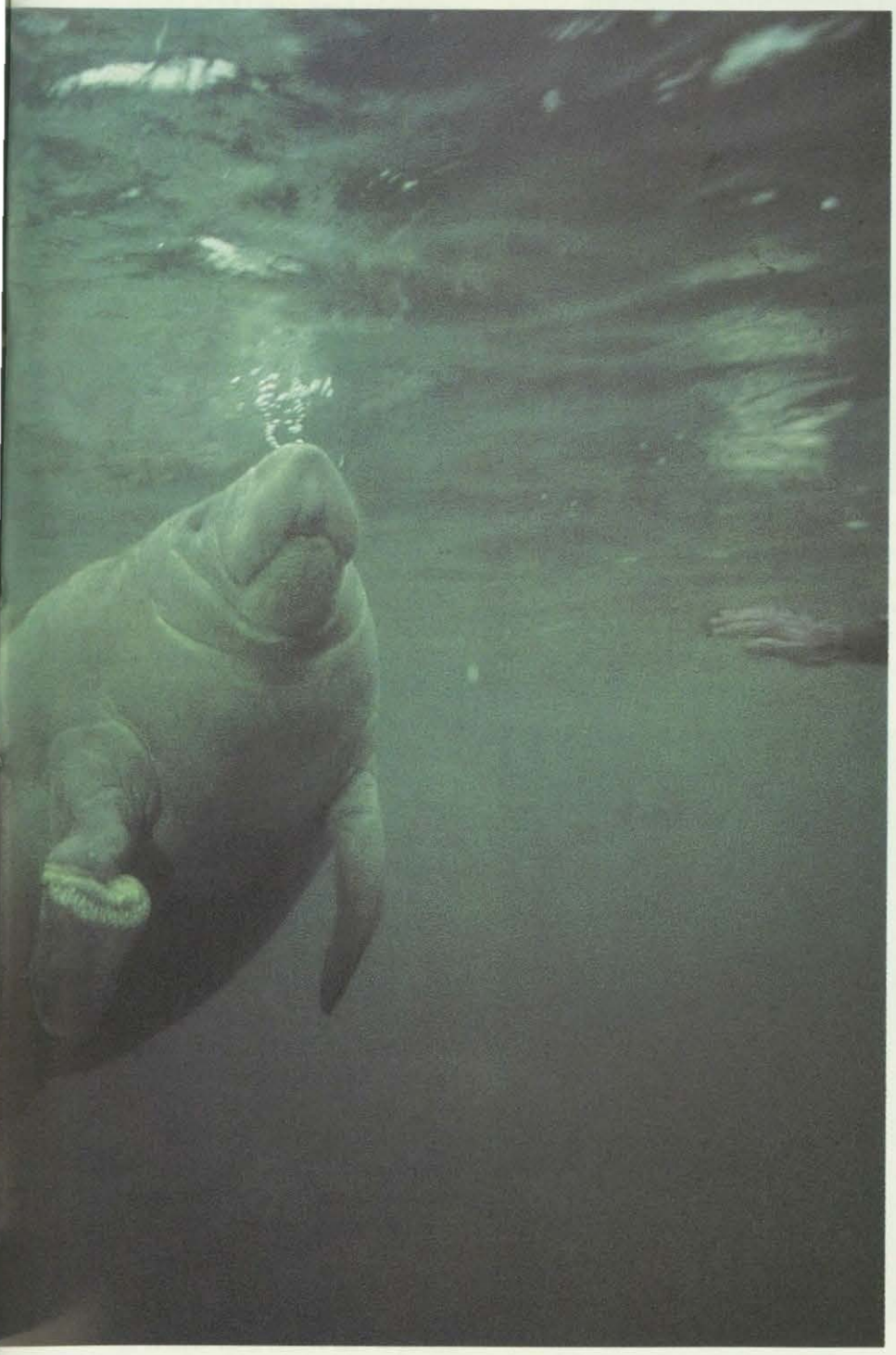
Flood control dams were formerly a significant source of mortality, but operating procedures have since been changed to prevent manatees from being crushed or drowned. About one-half of manatee deaths are now officially listed as being due to unknown causes. Ironically, at a time when public concern and need for information has reached a peak, the U.S. Fish and Wildlife Service has discontinued its program of salvaging manatee carcasses to determine the cause of death, due to a lack of funds. Fortunately, however, the state of Florida has established the 1984 Manatee Trust Fund Act and there have been voluntary contributions of money from boaters and other concerned citizens made to the fund.

Dr. Daniel Odell, head of the manatee salvage program at the University of Miami, says he expects his budget to drop slightly, but that the work there will continue.



Observing Florida's Bash

ATEE



ful Behemoth

Text and Photographs
By Doug Perrine

"The most important thing that people can do to help the manatees," says Odell, "is to *prevent the destruction of their habitat*. When we wipe out the seagrass beds that the manatees depend on for forage, we are limiting the number of manatees that can survive."

The manatees now surviving in Florida are a relict population of a species that was once common in waters throughout the Caribbean, and around Central America and South America down to Brazil. They are generally found in rivers, estuaries and coastal areas, but they make extensive migrations and are occasionally seen far from their normal range. While rarely seen outside of south Florida in winter, they have been sighted in summer as far north as New Jersey and as far west as Texas. When not on the move, their time is spent almost entirely in eating, resting and playing.

Play can take such forms as body-surfing on flume currents, "follow-the-leader," "I'll chase your tail and you chase mine," nuzzling, "kissing," hugging and various forms of sexual play. The manatee's activities do not seem to be constrained by any sort of daily rhythm or social structure. They apparently exist without leaders, territories, aggression or competition except for sexual rivalry. This type of unstructured existence seems to be the product of an herbivorous diet, combined with a size that makes them immune from most predators, with the exception of humans.

With their teeth set far back in their mouths, they are unable to bite even in self-defense. Described as mildly social, manatees may be found singly or in herds of dozens of animals. Herds do not have a static composition, however, and individual animals freely change their group associations. The largest herds form when a female comes into heat and is pursued by ever-increasing numbers of males, for up to a month, until she becomes receptive and copulates with the most persistent of them in rapid succession. ▷

Manatees have their mammary glands under their forelimbs. The baby shown nursing its mother, above, is nearly as large as she. Lactating females have been known to adopt orphaned calves, nurse each other's calves and sometimes allow adults to nurse.

In the springs of Crystal River, divers who attempt to interact with manatees often chase them from the springs by noon. The rare opportunity to observe these gentle giants in their natural environment should be exercised only when manatees approach humans.

Manatees reach lengths of more than 14 feet and may weigh more than a ton. One individual has been kept in captivity for more than 30 years, and it is suspected that the natural lifespan for this gentle species may be as long as 50 years. Although insulated by layers of blubber and designed with a high body volume to skin surface area ratio (which provides better heat retention), these mellow munchers have such a low metabolic rate that they cannot maintain their body heat when temperatures stay below 65 degrees F. In Florida, manatees congregate during winter at warm water sources such as power plant discharges and artesian springs.

Manatees share several characteristics with their land relatives, the elephants. The toenails are decidedly similar to those of the elephant, as is the gray- to brownish-colored hide. The prehensile muzzle, which the manatee uses to pull plants into its mouth to be crushed by horny plates and passed back to the molars, can be thought of as a short trunk. Finally, the teats in both animals are located in the underarms, a fact perhaps unknown to those who attribute the origins of the mermaid myth to manatee sightings.

Manatees nurse underwater with the calf by the mother's side, its muzzle buried in her armpit. Although babies begin to chew vegetation a few months after birth, they continue to suckle and remain dependent upon their mothers until an age of up to two years, at which time they may be nearly as large as their mothers. Lactating manatees have been known to nurse each other's infants, adopt orphaned calves and, at least in captivity, permit even other adult manatees to share in the bounty. After weaning, manatees adopt a diet composed primarily of aquatic vegetation.

The current best estimate of age at sexual maturity for females is about seven years, after which age they may calve every three years or so. The fact that a species with such a low reproductive rate could not support heavy hunting pressure was

recognized as early as the 18th century by the British, when Florida was first declared a manatee sanctuary.

The state of Florida passed manatee protection laws in 1893, 1907 and 1978, but poaching has still continued and the manatee population has continued to decline. At present, it is estimated that there are about 2,000 manatees remaining in Florida. In 1972, federal protection was added by the Marine Mammal Protection Act and again in 1973 by the Endangered Species Act. The 1978 Florida Manatee Sanctuary Act once again established the entire state as a manatee refuge and regulated speed limits for boats in areas where manatees congregate during the winter. Funds for enforcement of these laws, as well as for carcass salvage and research, have been raised by the 1984 Manatee Trust Fund Act.

Divers and swimmers are not permitted in most of the manatee aggregation areas in Florida. The one notable exception is Crystal River, where divers may still observe manatees in the wild during November through March. However, a good deal of discretion is necessary. State law prohibits "pursuing, harassing, disturbing, molesting or annoying" a manatee. This is interpreted to include following them on the surface or underwater, diving down to touch one, separating a manatee from a group or separating a mother from her calf and, of course, holding, grabbing or riding a manatee.

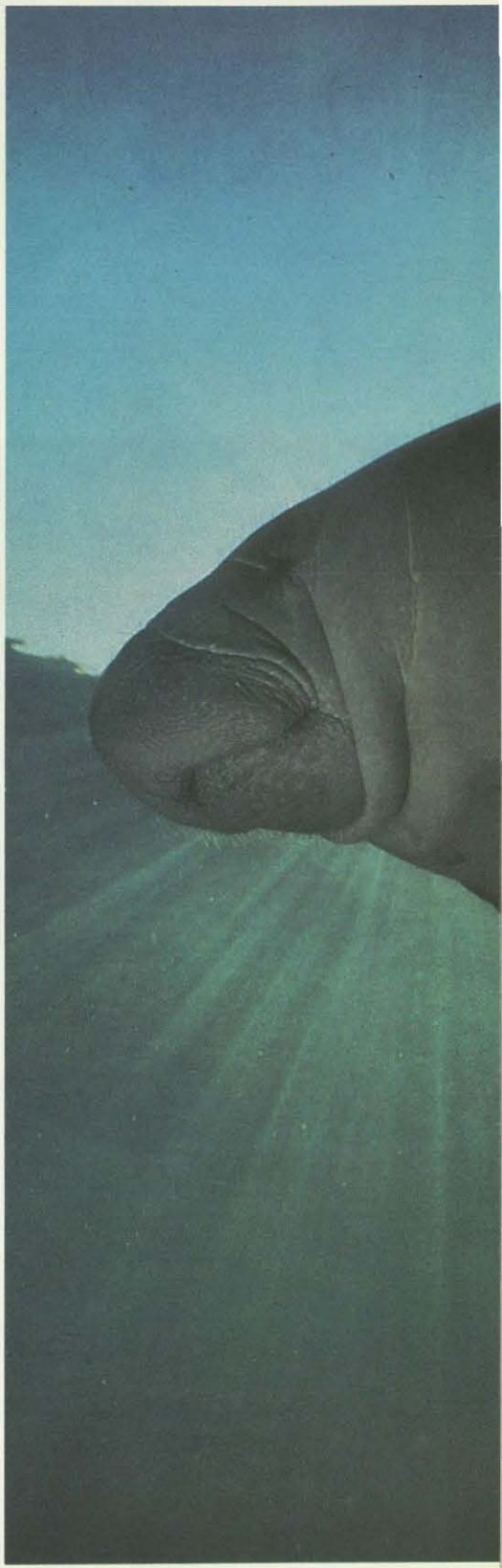
Divers should never approach manatees, as this may drive them from the warm water they need for their survival. Instead, divers should wait patiently and let manatees come to them if they wish to interact with humans. It is legal to touch a manatee *only if* it has approached you and not the other way around. Even so, the Florida Department of Natural Resources cautions against touching any member of an endangered species. Even researchers who are authorized to handle manatees in the course of their work have been arrested for playing with manatees in their off-duty hours.

Never enter a buoyed area marked as a manatee sanctuary. I would like to add that scuba equipment disturbs manatees, causes excess siltation of the water and is entirely unnecessary in the shallow waters of Crystal River, especially as manatees wishing to interact with humans will approach them at the surface. Alternately, if a manatee wishes to avoid humans, it will dive down to escape attention. Photographic strobes set on high power cause manatees to flinch, but do not seem to disturb them when set on low power and balanced against available natural light.

Unfortunately, many divers continue to disregard the law and the manatee's well-being. As a result, most of the animals are driven from the Crystal River springs by noon.

Anyone who sees another person harassing a manatee should speak to the offending party or else report him to the Marine Patrol at 1-800-342-1821. If divers and swimmers do not act responsibly, the privilege of observing manatees in the waters of Crystal River may well be taken away. At Blue Spring and other areas, the rare privilege of watching these gentle giants in their natural environment is no longer permitted. □

The state of Florida has passed many laws to protect manatees, but their population still continues to be hurt by collisions with boats and from the poaching activities of a few humans.



The Wild Hogs

Text By Gary E. Sabbag

The wild hogs of St. Marks Wildlife Refuge compete with more desirable wildlife species that live in the refuge. Management practices intended to help other species also benefit the hogs.

St. Marks National Wildlife Refuge, located some 30 miles south of Tallahassee, has a wide diversity of habitats. Its 65,000 acres of land and adjacent 31,500 acres of water in Apalachee Bay provide excellent food, cover and protection for several hundred wildlife species. Established in 1931, St. Marks is one of the oldest wildlife refuges in the United States.

The area has freshwater impoundments, natural marshes, brackish bays, tidal flats, hardwood swamps, pine woods, miles of shoreline along the bay and numerous tidal creeks. These diverse habitats support migratory and resident song birds, ducks, wild turkeys, hawks and owls, mammals and aquatic creatures. Bald eagles, black bears, white-tailed deer, Canada geese and other valuable species also live or migrate here.

With only minor exceptions for specially permitted wild hog and limited buck deer hunts, all plants and animals are protected in the refuge. Although the white-tailed deer is a native species, wild hogs are considered exotics.

"Wild hogs, or *feral hogs* as they are also called, are in direct competition with native wildlife in the refuge," refuge manager Joe White said. "Although we manage the refuge with native wildlife species in mind, feral hogs reap some of the benefits."

The wild hogs of St. Marks are most likely direct descendants of escaped or released domestic livestock. Indirectly, they are probably descendants of the Russian boar and various other European hog breeds. These were introduced in the 1930s in Tennessee, North Carolina, Kentucky and West Virginia for wild game purposes. Also, domestic hogs were brought to this country from Spain during the New World explorer days, in the 1500s. Many of these domestic hogs were released by early White settlers to spread and flourish in Florida. Unexpectedly, these hogs did exceptionally well and thrived.

Feral hogs are the most successful exotic large mammals living in the United States today. Hunting is employed as one means to control them. Populations of feral hogs are difficult to estimate, but Florida has large numbers of them. In 1974-75, 36,000 were harvested. By 1979, the harvest was 54,079, and it increased to 67,321 in 1983-84. But, at St. Marks, recent declines in wild hog numbers have occurred.

"In the last five years, the numbers of wild hogs killed on hunts in St. Marks amount to only a few hundred per year," biologist Joe Reinman said. "Compared to previous years, the harvest is down some 80 percent."

OF SAINT MARKS

Photographs By Michael H. Francis

Local hunters around the St. Marks area tell of harrowing wild hog hunting experiences. Getting treed or charged is not unusual. One told of another hunter who came upon a wild hog that "was so big he was afraid to shoot it." There wasn't a nearby sturdy tree to climb, in case he missed or only wounded the beast. Wild hogs can weigh up to 400 pounds.

Then there's a local tale about two hunters who heard a "horrifying" commotion up on a hill. "There was the sound of trees cracking. The ground shook like an earthquake and terrifying, thunderous roars resounded," the story says.

The two hunters quickly left the area, but returned the next day to satisfy their curiosity about what it was. Cautiously climbing the hill and listening intently, they came upon a strange, sobering sight. On the ground, side by side, lay a big black bear and a giant wild boar. Both were dead—they had fought ferociously to the finish.

Tall tale? Maybe. But one thing's for sure, says assistant refuge manager Doug Williams, "Wild hogs are unpredictable and very dangerous when aggravated. One should always exercise caution."

Even with liberal wild hog bag limits, special hog hunts and limited hunts allowing the use of dogs, wild hogs still manage to survive in the refuge.

"They're smarter than a domestic dog; they just can't jump as high," White said. "And they have the ability to remember and respond."

Wild hogs are social animals, and have a high reproduction rate. Their digging and foraging behaviors sometimes destroy habitat that is needed by other more desirable species. Hunting wild hogs is permitted as a viable means of controlling their numbers in the refuge.

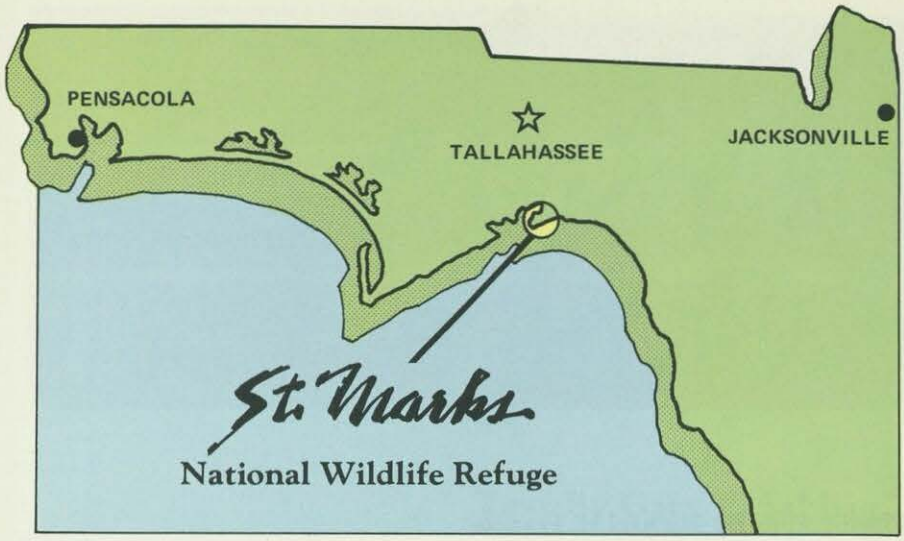
Talking about the hunting season, Williams said, "They seem to sense it and make themselves scarce. They have a great sense of smell, which enables them to detect you first."

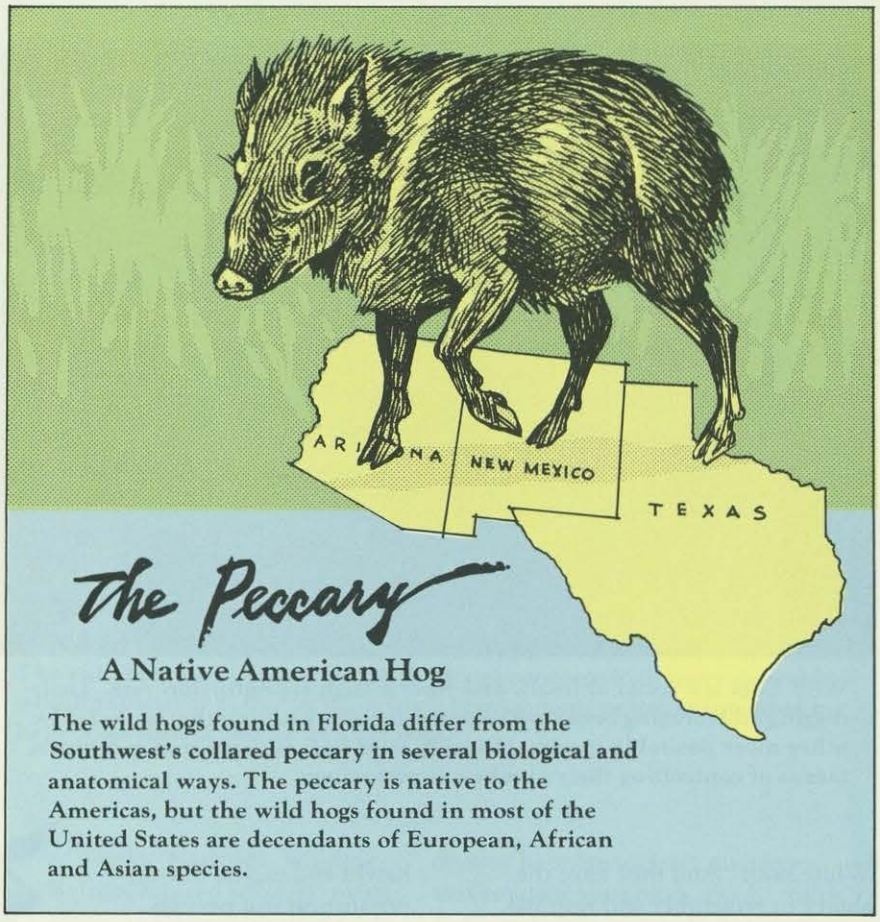
White agreed. He said. "With great prowess and adaptability, they'll change their habits during the hunting season. They'll even become nocturnal."

Besides man, wild hogs must contend with a few other natural enemies—black bears, and alligators. Young wild pigs must watch out for great horned owls, hawks and eagles, but the population still persists.

A key to the wild hog's survival is its high capacity to reproduce. They breed year-round and sows can have two litters per year, each litter ranging from five to 12 pigs. Infant mortality is relatively low.

Wild hogs are very social animals and band together in extended families. They often travel in groups of up to 20. Not particularly territorial, they do well in a wide variety of climates and habitats, although they prefer habitats like the hardwood and pine forests of St. Marks. They tend to stay close to ▷





The wild hogs found in Florida differ from the Southwest's collared peccary in several biological and anatomical ways. The peccary is native to the Americas, but the wild hogs found in most of the United States are decendants of European, African and Asian species.

plentiful and permanent water sources, such as those found here. Range area generally extends as far as necessary to find food.

Wild hogs can be herbivorous or carnivorous, and at times, they'll even become cannibalistic. Roots, fruits, grubs, insects, small mammals, amphibians, and reptiles make up part of their diet. "They're very opportunistic," White explained.

This, by and large, is the major problem with the wild hogs in St. Marks. They are so opportunistic, resourceful and adaptable they've become devastating and destructive. This is not only true in St. Marks but is also true elsewhere in the southeastern United States. Wild hogs disturb ground cover, deplete native species' food supply, displace native wildlife, upset natural ecological balances and damage farmland. Also, they can be a public health hazard.

Wild hogs, in particular, frequently carry an infectious organism called brucella. It's also found in domestic swine, but in the wild hog, this disease goes unchecked.

"Swine brucellosis can be fatal to humans," White explains. "Many doctors don't diagnose it these days. They often mistake it for flu or other diseases, which often have similar symptoms."

To guard against brucellosis infection, hunters who clean wild hogs should always wear rubber gloves and avoid direct contact with blood and mucus-producing body areas. Meat from wild hogs must always be cooked thoroughly before eating. Some authorities have suggested that if a hog has a severe infection of brucellosis, humans can become infected just by breathing near the carcass.

Many squirrel, rabbit, deer and turkey hunters would like to see exotic wild hogs wiped out because they are detrimental to these more preferred native game species. But, at present, the plan at St. Marks is to only control the wild hog numbers in the refuge.

"Wild hogs have been around here longer than me and other folks in this area," said George Bird, a veteran U.S. Fish and Wildlife Service law enforcement officer who has worked in the refuge for many years. Bird notes that because St. Marks is a refuge, even the wild hogs enjoy some protection here. The limited hunts are allowed to *manage* their numbers, not to *eliminate* them. "I've been sworn to protect all forms of wildlife here, even hogs," he says.

If a goal to eliminate the wild hogs of St. Marks was ever set, it would most assuredly be met with tremendous conservationist opposition, and logistically, it would be impractical to meet such a goal.

"That's some pretty rough country out there," White said. "We don't have the resources or the manpower to attempt such a task." He concludes, "Wild hogs will be here just as long as they can survive...and that's probably forever." □

Delicate Balance

Very slowly and sneakily, I crept downward and forward in the icy water until I could peer out onto the floor of the submerged room. My breath caught, my pulse quickened and a flame of excitement raced along my spine. There, sitting on the silt, were two of the largest Georgia blind salamanders (*Haideotriton wallacei*) I had ever seen.

Close by, three gigantic Dougherty plain cave crayfish (*Cambarus cryptodytes*) were walking erratically, as though they sensed danger. Totally enthralled with this rare natural history scene, I committed one of the worst errors in cave diving; I moved too quickly. From behind, big, brown, billowing clouds of silt and clay enveloped me and obscured my view.

I lurched forward ahead of the silt cloud and made one grand swoop of my aquarium net toward the closest salamander, stirring up everything. Then I pivoted my body around 180 degrees so I could return headfirst along the lifeline which was tied to my right wrist at one end...and to my wife at the other. She was in the safety of the air above.

Little brown bats roosting nearby saw a huge, black-clad monster spashily emerge from the dark subterranean pool and flap about in the soft mud of the cave floor, greedily chuckling to itself at its good fortune in capturing one of the water creatures.

The Georgia blind salamander is known to live nowhere else in the world but in underwater limestone passageways between Albany, Georgia and Marianna, Florida. I was trying to learn more about this rare creature of which knowledge is equally scarce. The first known specimen was pumped up from a 200-foot well in Albany in 1939, giving Georgia the first claim to its common name, even though it is now more commonly found in Florida. One of the world's most cave-adapted animals, its body is specialized for efficiency, which maximizes its survival in an energy-poor environment. Its spatulate head and enlarged, suctorial mouth are reminiscent of a similar emphasis on efficient feeding which is seen in big-headed deep-sea fishes.

Barry Mansell-Photograph

Species: Georgia Blind Salamander (*Haideotriton wallacei*)

Federal Status: Under review. Some evidence indicates biological vulnerability and/or threat.

Needing neither eyes nor pigment, *Haideotriton* (which means "salamander of the underworld") has only the most rudimentary of both. It has only a few pigmented cells on an otherwise white to colorless skin, and a pair of tiny optic capsules buried deep in the head. Its limbs are long and skinny, allowing only the most effortless quadrupedal locomotion, but because predators such as eels and blind cave crayfish are abundant and fast, it is fortunate that the tail and trunk muscles of *Haideotriton* are robust, allowing strong escape movements by swimming.

Never more than about three inches long, the Georgia blind salamander retains larval characters, such as its bushy external gills, all its life. Special sensory devices called *neuromast organs* help it detect minute disturbances of the water caused by food animals or enemies. It is known to eat tiny cave-adapted crustaceans called amphipods and ostracods, but its general life history and reproductive cycle are still a mystery.

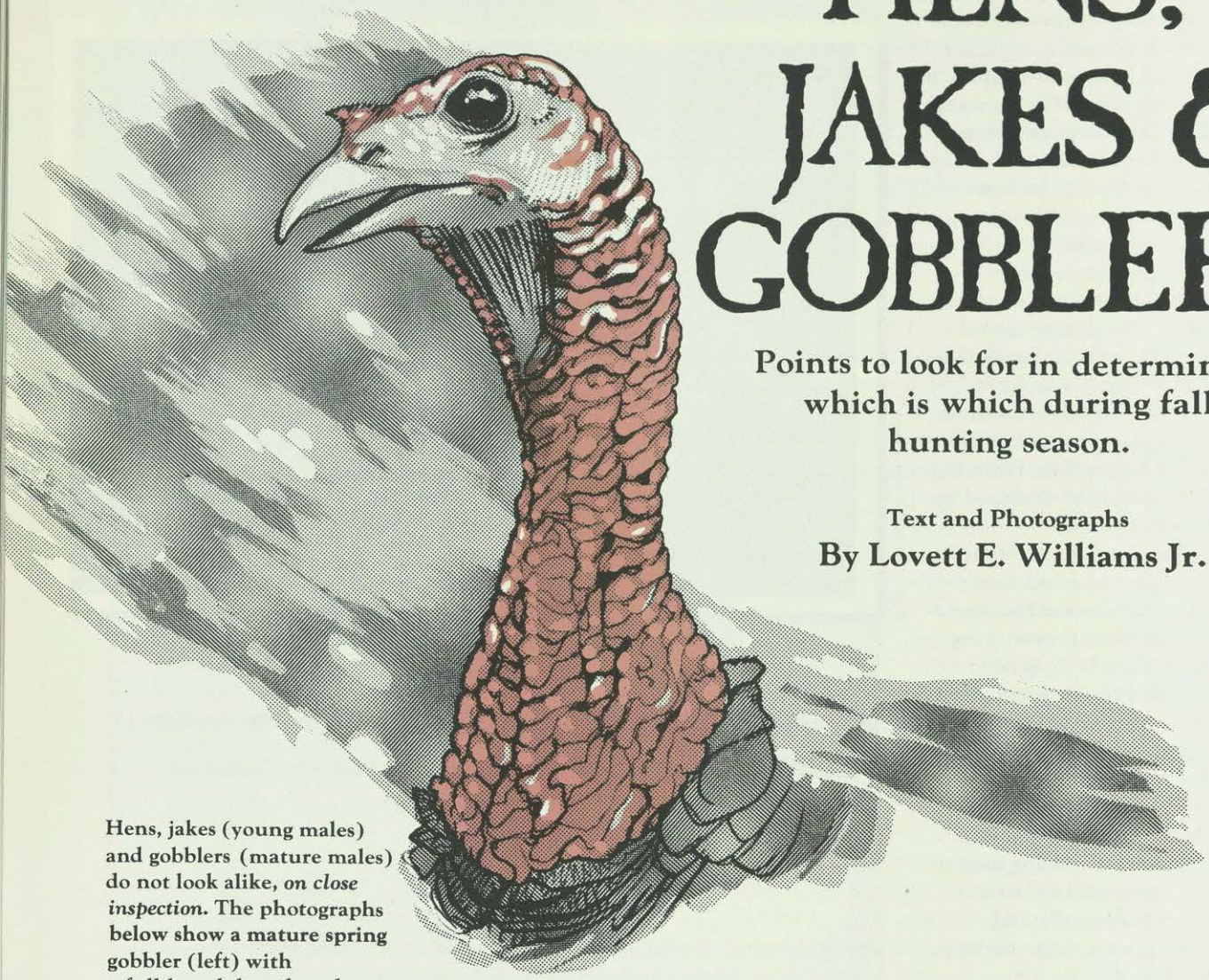
Blind cave animals can tell us much about the biological health of a region. The simplified food webs of caves and underground waters are severely shocked when the ground surface activities of man get out of hand. Shifts from forest to agriculture or urbanization, or from clean running streams to polluted waterways, or the lowering of water tables by too much pumping by local water wells, are threats to this near-endemic and unique species.

—D. Bruce Means

HENS, JAKES & GOBBLERS

Points to look for in determining which is which during fall hunting season.

Text and Photographs
By Lovett E. Williams Jr.



Hens, jakes (young males) and gobblers (mature males) do not look alike, *on close inspection*. The photographs below show a mature spring gobbler (left) with a full-length beard, and two juvenile spring gobblers (right) with shorter beards. Fall jakes, however, have beards so short that the breast feathers may hide them. Only some two percent of hens have beards.

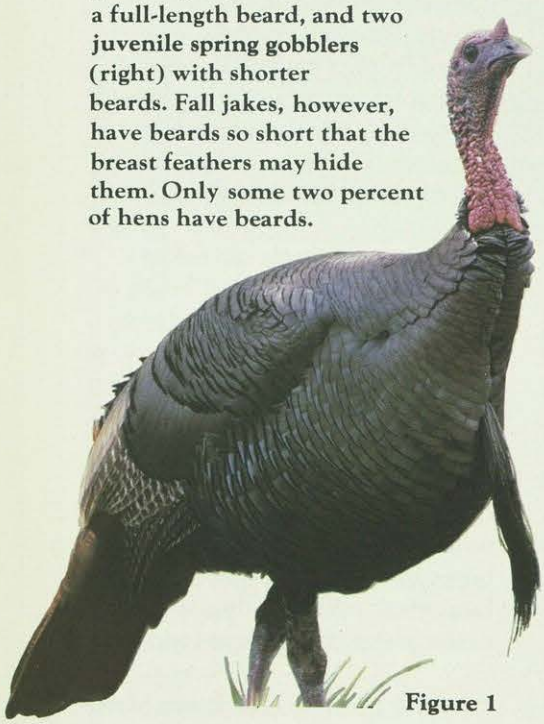


Figure 1

Figure 2

It is mid-November, a fitting time to be turkey hunting. You have hunted turkeys only during the spring gobbler season for three years now, but decided this fall to get your Thanksgiving gobbler *the hard way*. You haven't hunted turkeys in the fall before. You are proud of the two big spring gobbler beards which are displayed in your den and you would like to add another one; however, you've been warned that bagging a fall gobbler won't be easy.

Today, however, things are looking good. Two turkeys are moving toward you along the creek and, in not much more than a minute, they'll be within gun range if they keep coming.

You miss the songbirds you heard while hunting in the spring, but that is more than offset by the short supply of mosquitoes in November. And although you also miss the gobbling of spring turkeys, you'll have to admit that hearing their fall yelps and seeing turkeys in big flocks is exciting too. These and other thoughts help keep your blood pressure in control as the turkeys continue to slowly move toward you.

Finally, at 30 yards through the greenbriar and myrtle, you can clearly see a turkey "as big as an ostrich." You aim at the head and neck (as you should) with your 12-gauge (loaded to the hilt with number 6s—the best shot size) and squeeze the trigger. In a storm of wings and loose feathers, you rush to claim your prize. It is then you find you've bagged your third wild turkey—a nine-pound *hen* and the mother of the flock.

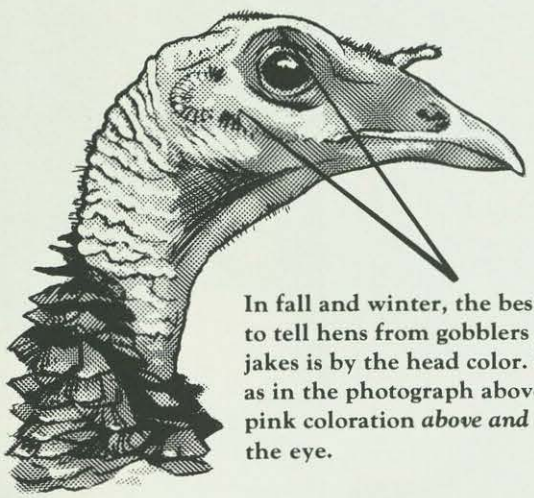
Fortunately, hens are legal in most areas of Florida, and if you get your Thanksgiving turkey by hunting and it's a hen, you have nothing to be ashamed about. But, perhaps you'll be tempted to refer to that particular turkey loosely as "him" and tend to emphasize it was a "wild" turkey, never mentioning that it was a hen you ate for Thanksgiving dinner.

Most Florida turkey hunters have shot hens, but would prefer to bag gobblers. They don't brag much about the hens they shoot. So, as a Florida turkey hunter, you are not alone in not knowing as much as you should about how to tell a young gobbler from a hen.

Turkey hunting has long been taken for granted in Florida since everybody's grandpa did it. Turkeys have been relatively plentiful throughout the state, even at a time when they were scarce nearly everywhere else. Hens have always been legal here and, consequently, there has been little reason for the average Florida turkey hunter to know how to distinguish fall jake (young male) turkeys from hens. If a case of mistaken sex identity occurred, the hen became a "turkey" and that was it.

Times are changing though. Because of escalating hunting pressure and vanishing habitat, turkey hen shooting may very well be phased out in Florida at some time in the future. Even if it isn't, the complete turkey hunter should know how to tell hens from gobblers because it's the gobblers that have beards and ▷

Figure 3



In fall and winter, the best way to tell hens from gobblers and jakes is by the head color. Males, as in the photograph above, have pink coloration *above and below* the eye.

Figure 4

The jake's pink coloration appears by the time they are 14 weeks old, which is by August in most of Florida (above). The hen's head is more feathered and has a grayish-blue coloration (below).

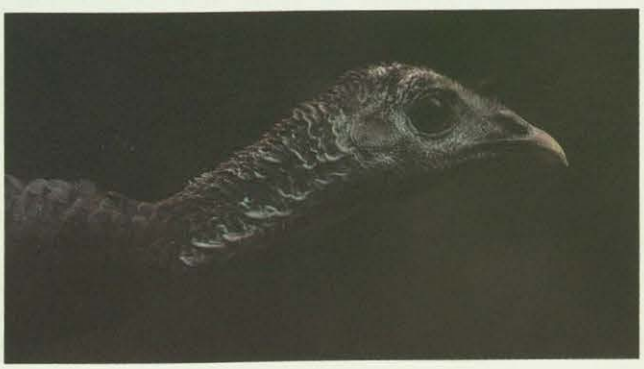


Figure 5

Figure 6

Both young jakes and mature gobblers have irridescent and black bands along the outer edges of the breast feathers (above). Hens have breast feathers with more rounded edges and more brownish color. The lower photograph shows a hen on the left and a gobbler on the right. Lighting conditions can make it difficult to see their color differentiations, so hunters should consider all the sexual characteristics, not just color.

Figure 7

spurs. And a big gobbler can stretch Thanksgiving dinner all the way through Sunday.

Most cases of mistaken sex identity are founded on the mistaken belief that fall jakes are very difficult to distinguish from adult hens. Such a notion causes some hunters to strain their eyes—when they see a turkey that looks like a hen—to make her into a jake. With enough optimism—or desperation—many hens do begin to look enough like gobblers to get shot because of it. However, that should never happen because hens do not look like gobblers *on close inspection.*

The most useful feature to distinguish adult gobblers from hens is the gobbler's beard (Figure 1). Only about 2 percent of Florida hens have beards.

The beard is not obvious on the fall jake. It normally does not break through the skin until September of the jake's first year, and even then it is seldom more than an inch long when the hunting season opens in November. To see it in the field, you have to look in exactly the right place on the upper breast.

With a good side view and a close look at the proper spot, there will usually be a slight, but noticeable, protrusion of the breast feathers pushed out by the small, underlying beard as early as mid-December.

By spring gobbler season, jakes have beards that poke an inch or more beyond the breast feathers (Figure 2).

Because many jakes have such tiny beards in November and December, the most reliable feature for distinguishing young fall gobblers from hens is the pink coloration on the side of the head *above and below* the eye. This is shown in Figure 3. Hens sometimes have a few pink caruncles on the head and throat, but they *never* have the uniformly pinkish skin in the eye region. The hen's head color is grayish-blue.

The pinkish head coloration of young gobblers appears by the time they are 14 weeks old—which is by August in most of Florida. This pinkish color becomes more pronounced as the bird grows older. By spring, the jake's head closely resembles the adult gobbler's head (Figure 4), while there is nothing about the head of a spring hen (Figure 5), that should cause any confusion.

Other important distinguishing features of the gobbler's head are the long, bare neck and reduced head feathering. Figure 5 shows that the hen's head is more heavily feathered, and the bare portion of the neck is shorter.

When a jake has been shot, you can part the breast feathers and find the small beard. This might be worth knowing, just in case your hunting companions don't know as much about the head and neck features as you do.

An equally reliable sexual characteristic of a bird in hand is the shape and color of the breast feathers. In both young and old gobblers, the breast feathers are dark, iridescent and have black bands at the outer edge, as shown in Figure 6. The breast feathers of old and young hens are brown with more rounded edges (Figure 8). The shiny, dark plumage of the gobbler contrasts with the brown plumage of the hen (Figure 7), but that

is not a completely reliable identifying feature when a turkey is alone and cannot be compared directly with the opposite sex. Lighting conditions can also play tricks on your eyes. A hen standing in the shade may look as dark as any gobbler.

As every hunter knows, gobblers have leg spurs (Figure 9), and hens ordinarily do not. Also, the legs of both young and old gobblers are longer than the legs of hens. Some gobblers do not have leg spurs, however, and some gobblers have a spur on one leg but not on the other. A few gobblers have been taken with double spurs on both legs and occasionally, hens will have spurs.

When you pull the trigger on a turkey, the point of aim should be at the head and upper neck with a full-choked shotgun loaded with shot no larger than number 4. I prefer number 6 or 7½, as do most experienced turkey hunters. The strategy behind using small shot is that it takes only a single small pellet in the neck or head to kill a turkey, and with the greater number of pellets packed into a number 6 or 7½, there is a much better chance of getting one in the right place than would be the case with 2s, BBs or number 4 buck. A number 2, BB or other large pellet can penetrate the body cavity of a turkey at a range beyond the effective killing pattern and fatally cripple the bird.

The decision on the best shot size to use should be based on the pattern of your shotgun, as determined by shooting at a target and examining the pellet spread. A good patterning target is available from the Florida Wild Turkey Federation.

It is a rare shotgun that will deliver a pellet pattern that is good for shooting a turkey farther than 40 yards away—even with the new copper-coated pellets in buffered loads that are now available. Every turkey hunter has a responsibility to learn his own gun's effective range by shooting at targets. You can terminate an otherwise good hunt very quickly by shooting at an out-of-range turkey, plus you chance a crippling shot.

While you're working with targets, be sure to practice judging distance. Practice by selecting a few objects on the ground around you, guess how far away they are, then pace off the distance. Most crippling losses are the fault of hunters who do not accurately judge distance—not the fault of the shotgun or shells.

As a final safeguard on judging range, pace off the maximum effective range of your shotgun before taking your hunting position. Use visible natural landmarks to gauge when an approaching turkey is within that range.

Studies have found that more than 78 percent of the turkeys taken by Florida hunters are killed by a single shot. Only 15 percent of Florida's successful hunters get a chance to use a second shot effectively, and only 4 percent kill their turkey with a third shot. This is because most missed shots are fired at turkeys which are out of range on the first shot and even farther out of range on the second and third shots. About 20 percent are lost as cripples. So make your first shot count—it's the only shot you'll get with the odds in your favor.

When you're in the woods with a finger on the trigger, aiming at a turkey you hope is a gobbler, remember that hens don't look like gobblers. With that knowledge, your disappointments of mistaken sex identity will be few and far between. And if you are hunting in the fall in an area where the landowner or Florida law prohibits shooting hens, you can still hunt jakes with the confidence that you won't be guessing at the sex when you pull the trigger. □

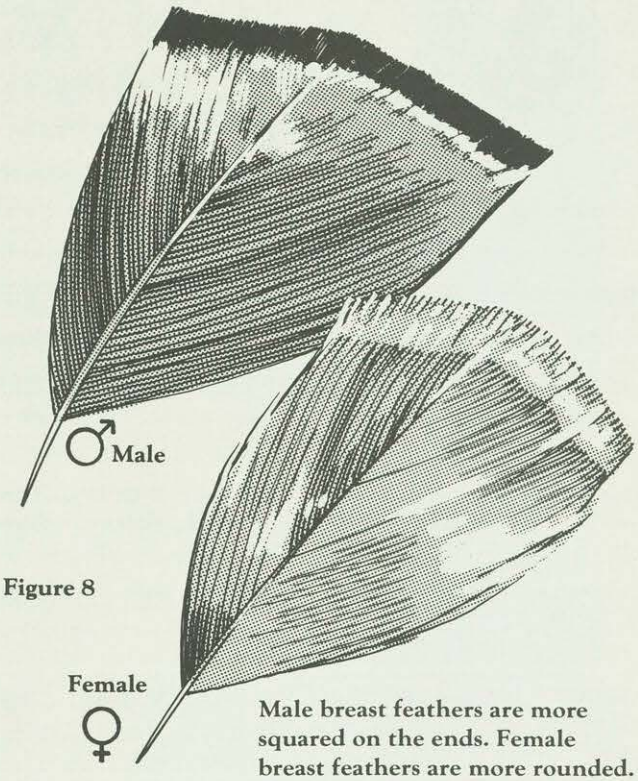


Figure 8

Male breast feathers are more squared on the ends. Female breast feathers are more rounded.

Gobblers have spurs and longer legs than hens. Rarely, however, a hen is found with spurs and gobbler with none or even double spurs.

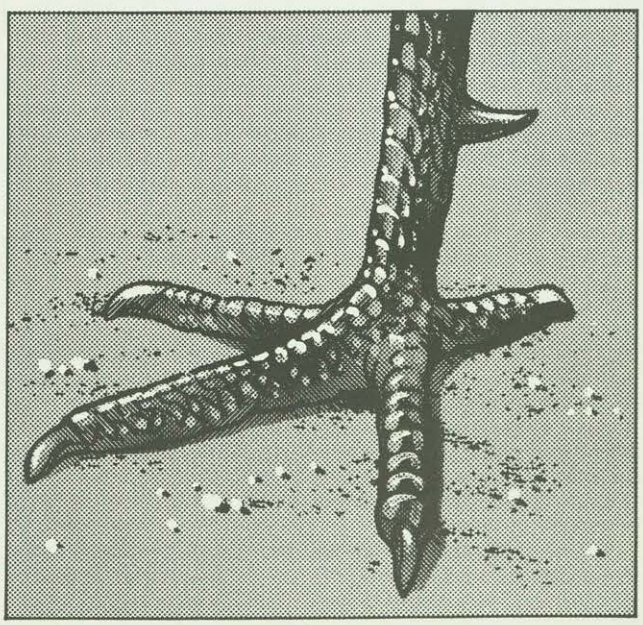


Figure 9

Hunter Education News

Compiled by Capt. Ed Tyer
Hunter Education Coordinator

1984-85 Hunting Accidents

A little more than one-third of the fatal firearm and archery accidents reported from July 1980 through June 1985 happened while a loaded gun was in, or being placed into or taken from a vehicle. About one-fourth of the fatal accidents involved victims who were in the line of fire, or beyond the shooter's intended target. Falls, stumbles and similar encounters, plus situations where the victims were mistaken for game, accounted for most of the other fatal accidents.

Fiscal years 1983-84 and 1984-85 each had 10 reported fatal accidents, but the total of all accidents, including those that were not fatal, was 36 during 1983-84 and 43 during 1984-85.

Accidents don't just happen—they are caused. It is hoped that the following summary of 1984-85 firearm and archery accidents will help you learn more about how accidents happen. Perhaps this knowledge will save your life or someone else's.

Day, Date, Time	Age of Shooter	Fatal	Self-Inflicted	Type of Firearm	Game Type	Circumstances
Wednesday 09/20/84 6 p.m.	38	Yes	Yes	Rifle	Hog	Firearm discharged while being picked up, muzzle first. Bullet struck victim in left cheek and traveled upward into the brain.
Saturday 10/06/84 5 p.m.	Unknown	No	No	Shotgun	Dove	Victim was shot at close range in the face and chest with #8 field loads.
Sunday 10/07/84 3 p.m.	18	No	Yes	Shotgun	Dove	Victim tripped near small hill, gun discharged and hit victim in left foot.
Sunday 10/28/84 8 a.m.	44	Yes	No	Shotgun	Bear	As shooter was taking gun out of truck, it fired, fatally striking victim who was standing on opposite side.
Sunday 10/28/84 5 p.m.	15	No	No	Shotgun	Rabbit	Victim and shooter were hunting near a pond when they saw a snake. Shooter went to shoot the snake and victim moved into the line of fire.
Saturday 11/10/84 Uknown	14	No	No	Shotgun	Hog	Shooter was shooting at hog. Bullet ricocheted off rock and struck victim in chest.
Saturday 11/10/84 9 a.m.	Unknown	No	No	Shotgun	Deer	Victim was standing on dog box when a ricocheting buckshot struck him in the mouth and broke a tooth.
Saturday 11/10/84 11 a.m.	47	Yes	Yes	Shotgun	Deer	Victim placed gun on top of another gun in the bed of truck. Gun discharged and struck victim in stomach.
Saturday 11/10/84 4 p.m.	30	Yes	No	Shotgun	Deer	Victim was near truck. Dogs jumped deer which ran between victim and shooter. Shooter fired and one pellet struck victim.
Sunday 11/11/84 8 a.m.	33	No	No	Shotgun	Deer	Victim moved into line of fire as shooter shot at a running deer. Victim was shot in back.

Sunday 11/11/84 10 a.m.	Unknown	No	No	Shotgun	Squirrel	Victim blew his nose, someone shot twice and hit victim in head.
Monday 11/12/84 11 a.m.	55	No	No	Shotgun	Deer	Victim was hit by ricocheting buckshot when shooter shot at a deer that was between the two.
Monday 11/12/84 7 p.m.	27	Yes	No	Shotgun	N/A	Shooter was removing gun from truck when it fired and struck victim in head.
Tuesday 11/13/84 6 p.m.	15	Yes	No	Shotgun	Deer	14-year-old victim and 15-year-old shooter saw a deer. Shooter turned with gun over shoulder to look, gun discharged and hit victim in neck.
Wednesday 11/14/84 8 a.m.	25	No	No	Shotgun	Deer/ Hog	Shooter shot victim while shooting at a hog. Victim was hit in middle of back and throat.
Sunday 11/18/84 12 p.m.	13	Yes	No	Shotgun	Turkey	A 13-year-old hunting with a 22-year-old mistook victim for a turkey and shot another hunter in a blind.
Friday 11/23/84 3 p.m.	46	No	Yes	Shotgun	Unk.	Hunter was coming down from a tree stand, gun discharged and hit him in the foot.
Friday 11/23/84 4 p.m.	13	Yes	No	Shotgun	Deer	Shooter was walking behind victim and stumbled. Gun discharged and hit victim in lower back.
Saturday 11/24/84 8 a.m.	25	No	Yes	Handgun	Deer	Hunter was placing his gun in its holster when it discharged and hit him in the lower right leg.
Saturday 11/24/84 10 a.m.	30	No	Yes	Shotgun	Deer	Victim was hunting from a horse. After shooting at a deer, horse bucked and threw victim off, causing his gun to discharge and strike his left foot.
Saturday 11/24/84 10 a.m.	54	No	No	Shotgun	Deer	Victim was shot by ricocheting buckshot which entered left facial cheek and lodged.
Saturday 11/24/84 2 p.m.	33	No	No	Shotgun	Deer	Shooter was shooting at deer. He hit three victims in his line of fire.
Saturday 11/24/84 2 p.m.	21	No	No	Shotgun	Hog	Victim was shot in both arms by another hunter as he reached for a hog he had just shot.
Saturday 11/24/84 4 p.m.	25	No	No	Shotgun	Deer	A pulpwood worker (victim) who was wearing a brown shirt was mistaken for game.
Saturday 11/24/84 5 p.m.	Unknown	No	No	Shotgun	Deer/ Hog/ Turkey	Victim was mistaken for turkey and shot in right hand.
Sunday 11/25/84 6 p.m.	19	No	No	Shotgun	Water-fowl	Victim was struck in back and face as shooter shot at a duck.

more ▷

Day, Date, Time	Age of Shooter	Fatal	Self-Inflicted	Type of Firearm	Game Type	Circumstances
Sunday 11/25/84 6 a.m.	34	No	Yes	Rifle	Deer	Hunter put round of ammunition in gun. Gun discharged and struck him in hand which was placed over muzzle.
Sunday 11/25/84 7 a.m.	21	No	No	Shotgun	Deer	Shooter in a tree stand mistook victim for a deer and shot victim in hip.
Sunday 11/25/84 5 p.m.	22	No	Yes	Shotgun	Deer	Victim shot himself when he tripped with his firearm.
Wednesday 11/28/84 12 p.m.	36	No	No	Rifle	Deer	Victim was hit in pelvic area from a bullet that ricocheted off a road when shooter was trying to shoot a deer.
Monday 12/03/84 7 a.m.	15	No	No	Shotgun	Ukn.	Shooter came back from hunting, thought gun was unloaded, pointed gun at brother and gun discharged.
Friday 12/07/84 11 a.m.	16	No	Yes	Handgun	Ukn.	Hunter was removing .22-caliber pistol from holster. Weapon discharged and hit him in calf of right leg.
Saturday 12/08/84 8 p.m.	25	No	Yes	Ukn.	Ukn.	Hunter was unloading supplies. Gun dropped from blankets, fired and shot him in right hand.
Saturday 12/15/84 7 p.m.	Unknown	No	No	Ukn.	Hog	Victim was wounded in left leg by an unknown shooter.
Sunday 12/16/84 8 a.m.	70	Yes	No	Shotgun	Turkey	Victim was mistaken for game and was shot by member of same hunting party.
Friday 12/21/84 2 p.m.	15	No	Yes	Shotgun	Deer	Hunter brushed against trigger of gun as he was removing it from shoulder and caused it to discharge into right foot.
Saturday 12/29/84 5 p.m.	Unknown	No	No	Shotgun	Deer	Hunter shot at deer and hit member of his hunting party in the leg. Victim started to get up and was shot again in the shoulder.
Sunday 12/30/84 10 a.m.	40	No	No	Shotgun	Turkey	Victim was mistaken for game and was shot in left shoulder and arm.
Sunday 12/30/84 2 p.m.	28	No	Yes	Rifle	Ukn.	Victim was loading gun in rear of truck when it fell, hit some rocks and discharged. Victim was struck in the chest.
Sunday 12/30/84 2 p.m.	Unknown	No	No	Shotgun	Deer	Victim was riding in back of truck with guns. Vehicle had difficulty which caused victim and guns to fall. Gun discharged and hit victim in abdomen.
Tuesday 01/01/85 10 a.m.	Unknown	No	No	Shotgun	Deer	Victim in tree stand was climbing down when he was shot in the back. As he turned around, he was shot again in the stomach and arm. Shooter is unknown.
Saturday 01/12/85 6 p.m.	60	Yes	Yes	Shotgun	Dove	Victim was driving truck and his shotgun was resting on the floor with barrel pointing upward. He apparently went over a bump which caused gun to discharge and hit him in chest.
Sunday 03/30/85 5 p.m.	23	No	No	Shotgun	Turkey	Victim was sitting behind tree calling turkeys. Shooter heard turkey call, saw movement, fired his gun and struck victim in right arm.

Overall Size: 17"H x 25"W. Image Size: 11 1/2"H x 17"W. Frame not included.

The Season for Giving... and Receiving!

When artist Gregg Murray produced his scratchboard rendition of a gray fox (*Urocyon cinereoargenteus*), he created a beautiful and accurate portrayal of this magnificent North American canine. The detail of his art is splendid, and these fine prints capture each tiny line of the original work in exact detail.

With the traditional gift-giving season just around the corner, you still have time to give one-year FLORIDA WILDLIFE subscriptions to three of your friends, for the regular cost of $7 each (only $21 total), and we will give you the print FREE!

To make it easy for you to order now, while we still have numbered prints personally signed by Murray, we have provided the coupon form below. If you don't want to cut the page, we'll accept a photocopy or a legible (typed or hand-printed) form of your own that gives the same ordering information. Please be sure to include ZIP codes, and don't forget to include your mailing address.

Prints will be shipped by U.S. Postal Service parcel post on a first-come, first-served basis. Please allow three to four weeks for delivery. Your gift subscriptions will begin as soon as we can enter them into our computer. Sorry, but we cannot extend present subscriptions for this special offer. Good while supplies last.

Please type or print legibly. Send check or money order for $21 (minimum) to FLORIDA WILDLIFE, Fox Print Offer, 620 South Meridian, Tallahassee, FL 32301. Please allow three to four weeks for delivery.

New Subscriber No. 1	New Subscriber No. 2	New Subscriber No. 3
Name _____	Name _____	Name _____
Address _____	Address _____	Address _____
_____	_____	_____
City _____	City _____	City _____
State _____ ZIP _____	State _____ ZIP _____	State _____ ZIP _____
Check one: ☐ 1 Yr. (6 issues) $ 7.00	Check one: ☐ 1 Yr. (6 issues) $ 7.00	Check one: ☐ 1 Yr. (6 issues) $ 7.00
☐ 2 Yrs. (12 issues) 14.00	☐ 2 Yrs. (12 issues) 14.00	☐ 2 Yrs. (12 issues) 14.00
☐ 3 Yrs. (18 issues) 20.00	☐ 3 Yrs. (18 issues) 20.00	☐ 3 Yrs. (18 issues) 20.00

Send Fox Print To: Your name _____ Address _____

City _____ State _____ ZIP _____

Conservation Update

Compiled by John Waters Jr.

75 Years of Boy Scouts

Since 1910, when a program for boys (which had been started earlier by British Army officer Lt. General Sir Robert Stephenson Smyth Baden-Powell) first came to the United States, more than 70 million Americans have been part of the movement. The international organization Baden-Powell started—Boy Scouts—to turn "pale, narrow-chested, hunched-up, miserable specimens" into "sturdy, patriotic, self-disciplined young men" is viewed by many as the most successful youth organization ever to exist in the United States.

Some 883,000 young people are currently members of Boy Scouts of America. The official scouting book, *The Handbook for Boys*, which provides moral instruction and much useful, practical information, has had more than 31 million copies printed since its first issue.

Boy Scouts, which includes Cubs for younger boys and Explorers for older youth, has a long tradition of teaching responsibility and citizenship and for building character. Many activities center around outdoor adventures such as camping, canoeing, hiking and nature study. Scouting also encourages conservation of our natural resources.

Although originally founded as an organization for boys, the scouting movement has grown to include Girl Scouts and Explorer units—which concentrate on choosing a career and which include young men and women. Tiger Cubs is a new program aimed at seven-year-olds which starts youngsters in scouting at an early age. □

Fall Migration Nearly Over

Florida is one of the last rest stops for millions of migratory birds which annually fly southward from throughout North America to their wintering grounds. Some of these are as far away as South America. Although most of the flights south take place during the fall, rather than winter, Floridians still have plenty of time to see birds.

There are favorite places throughout the state where birds are usually sighted in large numbers each year. Along the coast and around many lakes, marshes and prairies are often the best areas, but some inland locations are very good. The muck farms just northwest of Orlando, near Zellwood; Saddle Creek County Park just west of Lakeland; and Paynes Prairie State

Preserve, just south of Gainesville, are good places to observe our feathered friends.

At home, placing feeders in your yard with such foods as wild bird seed, bread crumbs, peanut butter, dried and fresh fruits, nutmeats and suet (beef fat) can attract quite a large number of species. These foods also provide them with nutrition and energy to complete their migratory flights.

Around natural food sources, such as fruit- and seed-bearing trees and shrubs, are also likely places to see birds. The sight of a flock of cedar waxwings feeding en masse on the bright red berries of a holly tree is an experience you will long treasure. □

Hurricane Elena Damaged Oysters

When Hurricane Elena passed through the Apalachicola Bay area of northwest Florida around Labor Day, the productive oyster beds there were severely damaged by the rough currents caused by the storm. Most of the commercial oyster supply in the state now comes from this area. In Franklin County, which only has some 8,000 people, around 70 percent of the population depends one way or another on the seafood industry. Harvesting may be prohibited for as long as 18 to 24 months to allow the oysters to recover to sustainable levels.

Marine shrimp, which normally migrate into the bay and surrounding estuaries at that time of year, were driven back to sea for a couple of weeks. But they have since returned to provide many shrimp fishermen opportunities to make good catches.

The Everglades kite, which is listed in most field guides as the snail kite (*Rostrhamus sociabilis*), is endangered. U.S. Fish and Wildlife Service biologists said about 350 of these graceful birds of prey are living on the area. This is estimated to be about half the known population. □

8.4 Million Fish Died in a Week

Low dissolved oxygen in Lake Ocklawaha (Rodman Reservoir) was the cause of two massive fish kills in late August and early September in two areas of this 10,000-acre manmade lake bordering Putnam and Marion counties. A massive die-off of nearly all the fish in one four-mile section of the reservoir occured near the Kenwood area. Most of these were small fish, but downstream near the Rodman Dam, a second fish kill consisted mostly of larger fish. An estimated 8.4 million fish died in both kills.

The normal oxygen level for Lake Ocklawaha is about five parts per million, but scientists found less than one part per million at the time of the kill.

A scientific investigation by Commission biologists in the Central Region indicated the oxygen-poor conditions resulted from excessive organic material being washed and pumped into the Oklawaha River as a result of runoff from heavy rains which immediately preceeded the fish kills. Heavy rains often cause organic materials to be washed into water systems, where they also decay. The decay process uses up dissolved oxygen needed by the fish.

Another suggested possibility was that herbicides which were spread on the lake to control excess aquatic vegetation indirectly caused the fish kill when the treated vegetation began to die and decay. □

Landfill Area To Have Preserve

South Florida's Palm Beach County Solid Waste Authority has set aside 440 wetland acres of a 1,300-acre parcel, intended for use as a landfill. The purpose of this action is to help conserve Everglades kites and other bird species that nest there. Environmental spokesman Tom Keith said no development will be allowed on the protected acres, and that another 10-acre area which is currently being used by nesting colonial wading birds will also be protected.

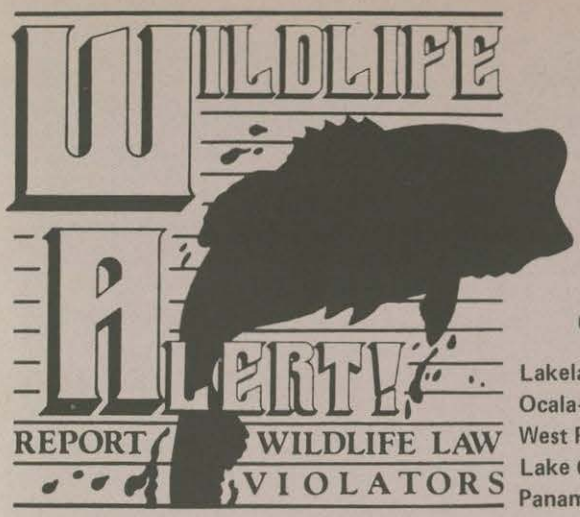
Plans are to leave both areas undisturbed, except for the possibility of having to control such pest plant species as the melaleuca trees which tend to compete with and overgrow native trees and shrubs. □

Holiday Projects For the Family

As the traditional holiday season continues, fun-filled hours await the family who collects natural materials to be crafted into decorations. Pine cones, hickory nuts, magnolia leaves and other items have long been used to make arrangements for doors and tables and other handcrafted ornaments. They can be used in their natural forms, or painted in bright colors with easy-to-use canned spray paints. Children take special pride in helping with these holiday activities.

Remember, though, to get permission from landowners before going on private property to collect. Also, most refuges and public parks have rules which prohibit taking plant materials. Check with the ranger in charge for local rules.

Holly has long been a popular decoration material, but is becoming scarce in some parts of the state, primarily because of disappearing habitat, but also because of overzealous collectors. You can help conserve these valuable native trees by using commercially grown holly, or using artificial holly. Even though there is something nice about the real thing, there is something nicer about conserving it. □



Florida Game and Fresh Water Fish Commission

CALL TOLL FREE

Lakeland- 1-800-282-8002
Ocala- 1-800-342-9620
West Palm Beach- 1-800-432-2046
Lake City-1-800-342-8105
Panama City- 1-800-342-1676

ARE YOU MOVING?

Please Use This Form (or a copy) for Address Changes.

Attach a recent magazine address label here

Please type or legibly print your new address below:

Name

Address

City State ZIP

EFFECTIVE DATE OF CHANGE:

MAIL TO: FLORIDA WILDLIFE, 620 South Meridian, Bryant Building, Tallahassee, FL 32301

39-6

IF YOU MISS AN ISSUE

Please Use This Form (or a copy) to Request Replacements

Name

Address

City State ZIP

ISSUE NOT RECEIVED:

(Months and Year)

MAIL TO: FLORIDA WILDLIFE, 620 South Meridian, Bryant Building, Tallahassee, FL 32301

39-6

This publication was produced at an annual cost of $40,080, or $1.34 per copy, to provide information to the public about wildlife resources of Florida. Subscription revenues defray a substantial portion of the above-listed cost of magazine production.

STATE OF FLORIDA GAME & FRESH WATER FISH COMMISSION

Commissioners

THOMAS L. HIRES SR.
Chairman
Lake Wales

WILLIAM G. BOSTICK JR.
Vice-Chairman
Winter Haven

C. TOM RAINEY, D.V.M.
Miami

J.H. BAROCO
Pensacola

MRS. GILBERT W. HUMPHREY
Miccosukee

Administration

ROBERT M. BRANTLY
Executive Director
620 South Meridian Street
Tallahassee, Florida 32301
(904) 488-1960

F.G. BANKS
Assistant Executive Director

WILLIAM C. SUMNER, Director
Division of Administrative Services

BRANTLEY GOODSON, Director
Division of Law Enforcement

DR. ALLAN L. EGBERT, Director
Division of Wildlife

SMOKIE HOLCOMB, Director
Division of Fisheries

BRADLEY J. HARTMAN, Director
Environmental Services

DENNIS "DUKE" HAMMOND, Director
Informational Services

Regional Offices

Northwest Region
T.L. GARRISON, Director
Route 4, Box 759
Panama City, FL 32405
(904) 265-3676

Northeast Region
LARRY MARTIN, Director
Route 7, Box 440
Lake City, FL 32055
(904) 752-0353

Central Region
ROBERT B. BUTLER, Director
1239 S.W. 10th Street
Ocala, FL 32674
(904) 629-8162

South Region
J.O. BROWN, Director
3900 Drane Field Road
Lakeland, FL 33803
(813) 644-9269

Everglades Region
O.G. KELLEY, Director
551 North Military Trail
West Palm Beach, FL 33415
(305) 683-0748

Floridana

When Marjorie Kinnan Rawlings, author of the Pulitzer Prize-winning novel *The Yearling* and the well known novel *Cross Creek* first came to rural southeastern Alachua County, she had been accustomed to a more lavish life-style. Being the wife of a New York newspaper executive, she had often spent Sunday afternoons aboard his yacht.

More than likely, the foods served aboard the yacht were quite fancy and urban in flavor, compared to Cross Creek's regional diet of game, fish and locally grown foods such as sweet potatoes, beans, citrus fruits, corn, collard and mustard greens, and other traditional Southern fare.

Whereas New York City had well-stocked delicatessens that sold a rich variety of wines, cheeses and processed meats from around the world, the local stores where Cross Creek folks shopped—in Island Grove, Hawthorne and Micanopy—stocked one main kind of cheese, no wines and only two or three kinds of processed meats.

Cross Creek was very much an untamed place in the 1930s when Rawlings settled there. Venison was still as good as or better than the tough beef some stores had, and wild ducks were plentiful on Orange Lake. Bass, bream and catfish were abundant, and even poor folks had plenty of fish to eat. And there was always softshell cooter, frogs legs, 'possum, squirrel or quail to enjoy when you grew tired of fish.

Marjorie adapted quite well to the regional food differences, and she grew rather plump from her enjoyment of the local foods. She was also known for being an excellent cook.

Although "*Four and twenty blackbirds baked in a pie*" comes from an old English folk song, Marjorie found that two-dozen red-winged blackbirds were "just the right number for six people" when she cooked blackbird pie to serve her dinner guests at the creek.

Marjorie harvested her own blackbirds from the northern edges of Orange Lake, where they still nest, feed and fly among the cattails and other vegetation surrounding the large shallow lake. Number 6 shot, purchased in Hawthorne at G. E. Gay's general store and in Micanopy at Thrasher's general store, were fired from a double-barrel 12-gauge to harvest the small birds.

It was later that Marjorie realized that federal laws had been passed to protect the red-winged blackbird and other songbird species. She stopped hunting them when she learned they were protected.

—Adapted from *Cross Creek Album* by John M. Waters Jr.